

**Style and Media in Chimú art:
Researching the British Museum's collections**

Kirsten Maclean Halliday

PhD

University College London

I, Kirsten Maclean Halliday confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Abstract

This research examines changes in craft production on the North Coast of Peru between c.AD1000 and 1550, under first Chimú and then Inka state control. It aims to

assess the extent to which North Coast craft production was appropriated and deployed by the Chimú and Inka elites to disseminate state-sponsored iconography.

Previous studies of craft production and the role of prestige goods in the political economy are reviewed. From this basis I develop a methodology to identify and compare the technical and aesthetic qualities of Chimú objects made using different craft media (primarily textiles and pottery). The British Museum's collections provide the primary database for this research, complemented by Peruvian collections from more secure archaeological contexts.

The production sequence for each artefact is systematically recorded in order to pinpoint how the iconography is incorporated into the object and to compare the steps involved. This allows me to investigate the extent to which technical principles and artisanal attitudes (or agency) interact in the production of goods. My goal is to discern those Chimú traits which result from engrained North Coast craft-working traditions from those that are influenced by state-imposed demands.

The focus on Chimú-Inka material permits an evaluation of Chimú artisanal agencies under Inka rulership. In fact 'Chimú' iconographies and technical traits were spread widely during the Inka period, reaching far beyond the boundaries of

the former Chimú Empire. The Chimú visual vocabulary was adapted, in some cases merging with highland canons and occasionally with the overt imposition of Inka forms on Chimú vessels and garments, as well as a more subtle rendering of Inka imagery in Chimú techniques. I argue that particular combinations of materials, techniques, imagery and colour characterise 'lines' of goods which played different roles in North Coast society. Chimú and Inka influences were in some sense reciprocal, and require a more nuanced understanding of 'state control'.

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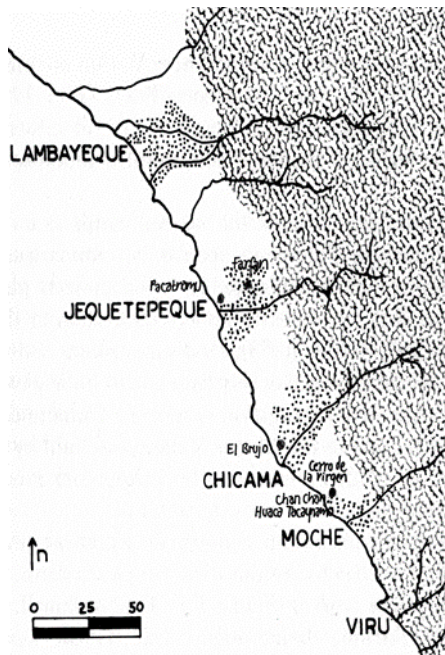
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CHAPTER ONE: INTRODUCTION

1.1 The research

This research is the outcome of an AHRC-funded collaboration between University College London and the British Museum. It evaluates differences in the nature and level of control exerted on crafts practised on the North Coast of Peru between c.A.D.1000 and 1550, a period dominated initially by the Chimú State and then by the Inka Empire. The Chimú State from around A.D.900/1000 dominated much of the North Coast during its reign which ended in approximately A.D.1460 when it fell to the rival Inka. Particularly in the later stages of the State craft production became the major focus evidenced at the capital city Chan Chan. Indeed Conklin (1990: 64) suggests that a significant role of Chan Chan was realized in the 'sponsorship, collection, display, storage, and burial of art on a vast scale', relating the city's function to that of a museum.



Map 1.1 (above left): the North Coast of Peru and sites relevant to the study

Map 1.2 (above right): the Inka Empire; after Caceres Macedo 2009: 337

From about the mid fifteenth century A.D. Inka culture was spread from the capital Cuzco northwards to Colombia and south to central Chile by soldiers, administrators and artisans. To sustain these corps and to support the cults and

royal families a tribute system was used which allowed the transport of goods around the Empire.

The study is based upon collections in the British Museum, contextualized with reliably-provenanced material held in Peru. The London collections of Chimú material number some 700 ceramics, 100 textiles and about 20 vessels and personal ornaments of metal, mainly acquired in the first half of the twentieth century. The aim is to assess the extent to which alternative means of manipulating fibre and clay can be related to independent domestic production contexts or those which suggest either direct or indirect state involvement. The study will highlight evidence of variation in quality and technique in relation to particular iconographic themes and forms of objects. I examine the degree to which particular technical features are apparent across media and materials with a view to establishing whether these reflect state-imposed demands on production, or an engrained and enduring North Coast technical style (c.f. Lechtman's work, e.g. 1975, 1993). I also explore how particular technically-derived aesthetic effects transfer across media, and identify how important formal elements in Chimú imagery in different media are rooted in and shaped by craft-based principles.

The conquering Inka neither destroyed nor replaced the weaving and ceramic traditions of the Northern valleys. Under their *aegis* Chimú iconographies and technical traits were spread far beyond the boundaries of the Chimú State. The Chimú visual vocabulary adapted under the Inka, in some cases merging with highland canons. Inka presence is evident in the overt visual imposition of Inka forms on Chimú vessels and garments, and in the more subtle rendering of Inka

imagery in Chimú techniques, but influences were certainly reciprocal. Further identifiable is a set of iconographies which become standardised and widely spread during the Inka occupation of the North Coast.

This study, though centring on two media – textiles and ceramics – develops a methodology which is applicable also to metalwork and those ‘multimedia’ pieces involving combinations of materials. It questions a straightforward division into utilitarian goods and prestige goods based on the materials used. It investigates the extent to which dual or multiple lines are identifiable among goods produced using elite-associated materials (gold, silver, camelid fibre, *Spondylus* shell, feathers) and those associated with lower status - cotton and clay. The study raises the possibility that ‘prestige’ pieces were manufactured outwith direct elite involvement. It builds upon Tschauner’s (2006: 172) criticism that the Chimú palace economy had come to be taken as representative of the entire Chimú economy, with craft production equated with the production of prestige goods made to circulate in the political economy. This, as Tschauner noted, does not account for the sheer amount of fine and utilitarian ceramics or, I argue, cotton cloth – fine and otherwise.

This study investigates how the different lines of goods interact in different media and how they relate to and influence the development of what might be thought of as Chimú ‘trademark’ features.

1.2 The data-set

High-quality pieces of strong visual interest are naturally well-represented in the BM collections, reflecting individual donors' and institutional interests during the period of acquisition (mainly mid-19th to mid-20th century). While the British Museum (hereafter, 'B.M.') collection arguably lacks reliable data regarding provenances (as is the case with most museum collections both here and in Peru), the study juxtaposes the London material with collections identified in Lima and Trujillo which have better-recorded archaeological context. In order to gain a more representational picture of the breadth of Chimú material culture several Peruvian collections in Trujillo from known sites are examined which emphasise the utilitarian nature of much Chimú craft, to balance the 'luxury goods' aspect of the (cloth and metal at least) of the London and Lima museum collections. The cross-media study of craft production presented here seeks to demonstrate the benefits of juxtaposing museum (and non-museum) collections. Together the representations of materials, techniques and imagery are likely to give a much broader picture of a material culture than a single excavated set of objects would. For example the excavated cloth used in the study highlights several distinctive technical styles of which there is little evidence in either the London or Lima collections. The excavated cloth appears very technically consistent within the samples, emphasizing particular techniques within the broader Chimú repertoire as more fully represented in museum collections.

The primary data-set consists of some 500 Chimú and Chimú-Inka vessels and 100 textiles in the collections of the B.M. and various institutions in Peru, the latter including material with good archaeological context. The study develops a methodology to enable the measuring and assessment of different aspects of craft production and aesthetic emplacement. This allows comparisons to be drawn between crafts in different media and between Chimú objects and those made under the Inka occupation of the North Coast, in terms of artisanal versus planner/elite agencies. This methodology is applied to 250 of the ceramics and the 100 textiles in the data-set.

CHAPTER TWO – BACKGROUND: PROCESS AND METHOD

This chapter begins with an outline of the various approaches to the study of craft production developed over the past few decades, including the sequential process of object fabrication, technical choices, cross-media complementarity and the interaction between patrons, planners and artisans. The chapter then focusses on Andean material in an overview of previous work on textiles and ceramics, discussing in particular the distinction between technical process and fabric structure and the research which set such a precedent. This emphasis on process and method is followed by an introduction to Lechtman's (1975) concept of 'technological style' and one such distinctive manner of doing something - producing objects by 'assembling' constituent parts. It closes by introducing Feinman *et al's* (1981) Production Step Measure which will be a key tool used in the analysis offered by this thesis.

2.1 Craft production

Early studies in the field of craft production include research on the sequential process of objects' fabrication and usage, really beginning with Jouannet's work on the Dordogne stone axes of the early 1800's (Schlanger 2005) and developed by Leroi-Gourhan in his breakdown of the dynamics of techniques – their structure, components and phases – from which comes his notion of the *chaîne opératoire*. Building on this, Lemonnier discusses techniques as socialised action on matter, involving tools, procedures and knowledge, distinguishing between '*taches stratégiques*' – elements which cannot be changed without altering the final result

– and those technically arbitrary variants which might be culturally relevant (e.g. Lemonnier 1990, 1993). The ‘technical choices’ aspect of craft production has been emphasised by Van der Leeuw (1993), Van der Leeuw *et al* (1991) and Sillar and Tite (2000), and related to this is Lechtman’s work since the 1970s on the stylistic nature of Andean metallurgical activities, in which technologies developed to manipulate metals are seen as ‘performances’ based upon artisanal attitudes to the materials they worked (e.g. 1975, 1984, 1993, 2007). In this research I will develop this approach to assess the materials and labour that go into each step of the production process and the relationship between the individual and cultural knowledge/skill of the artisan and the demands/control of the state.

Placing the fabrication phase of an object within the context of its overall life-cycle is Gosden and Marshall’s (1999) biographical perspective, which argues that for each phase of an object’s life - production, consumption, deposition and post-excavation- it acquires a distinct ‘age profile’ according to cultural context. Lucas’ (2005) concept of ‘social age’ is useful in its localisation of a piece within its wider genealogy – e.g. his example of a Roman jar traceable to the Late Iron Age rather than being of Roman-style – permitting investigation into relations with other objects, and how different media and different attributes of one medium (e.g. vessel patterning and shape) might show different temporal dynamics.

Costin (2001) provides a comprehensive theoretical framework for a holistic approach to the study of craft production which breaks down production systems into interrelating components, placing equal emphasis on artisans, means of production, organisation and social relations, products, distribution mechanisms

and consumers. A long-term study has been undertaken in this vein by Shimada (e.g. 1985, 1995, *et al* 1998) with his Proyecto Arqueologica Sicán at Bátor Grande, an interdisciplinary project involving excavation of workshops and production loci to obtain data on resource procurement, fabrication sequences, relations between coterminous crafts, artisanal organisation and relationships with sponsors and/or consumers. Holistic approaches such as this, and also, for example, that of Rehren and his colleagues on industrial organisation at Quantir-Piramesses, Egypt (e.g. Rehren *et al* 2001) thus relate technologies to wider material and cultural practices, and demonstrate the interdependence of particular technical choices that link particular crafts together through their access to raw materials, tools, and techniques (see below).

These various approaches balance the production stage of an object's life cycle with that of the consumption phase, and elite patron and consumer roles with artisanal agency in artefact production and form. Such 'bottom-up' view-points are necessary for considering inter-craft relations, rather than exclusive utilisation of a 'top-down' approach emphasising political economy and sponsors. However, it should also be recognised that technical design and processes are based upon and embedded within wider social logics – technical systems 'correspond' with other social practices and 'systems' (e.g. Lemonnier 1986, 1993). While the *chôte opératoire* approach enables a production sequence, its technological choices and utilisation of certain tools to be drawn out and questioned at each step, as Sillar and Tite (2000: 4) emphasise, such a linear analysis does not give insights into why specific choices were made, and what their material and social consequences were. In this research I will consider the choice of weaving and pottery-making techniques

in relation to the supply of raw materials, the time and skill required in order to evaluate how these may relate to the degree of state control over the production and consumption of the products.

2.1a Cross-media complementarity

The clustering of diverse craft industries has been long noted in pre-industrial centres across the world (e.g. 1920s excavation reports from Mohenjo-daro and Harappa note inter-craft relations – Kenoyer and Miller 2007). Excavating at Chan Chan Topic (1982, 1990) coined the term ‘horizontal integration’ to describe the arrangement of goods manufacture within the capital city, in which certain crafts are grouped together within *barrio* and retainer areas. Multiple crafts are evidenced within the same structures – for example one workshop appears to have focused on wood-working but also shows evidence for spinning, weaving and metal-working (Topic 1990: 158). Topic observes that ‘workshops are specialised spaces but did not necessarily specialise in one product’ (1990: 156). This contrasts with the organisation of production at the Moche V capital of Pampa Grande. Here one finds that specific crafts are associated with specific workshops – Shimada (2005) documents cotton processing, weaving, *Spondylus*-working and metal-working workshops and only in one instance is there evidence of diverse crafts concentrated in one space. The Chimú system would have been highly efficient in allowing direct co-operation in the creation of compound goods (involving several materials) and also between tool-makers and users (e.g. wood-workers and weavers). Such arrangements can be seen as beneficial to the sponsors in terms of

economic efficiency and allowing flexibility in responding to their various demands. This organisation would also have enabled artistic and technical transfer and innovation through collaboration or competition.

Wengrow's (2001) study analysed a contrasting situation looking at the effect of segregation of crafts. Between the Neolithic and Uruk periods in Mesopotamia the appearance of multi-room, tripartite houses reflected the 'rationalization of domestic production' and effectively inhibited exchange between pottery and weaving (2001: 181). By Uruk time decorative practices on pottery had become estranged from weaving techniques which were the basis for their reproduction as a type of social knowledge. The current study, within the context of integrated craft production at Chan Chan, shows how the materials, tools and techniques used in one production sphere might have been drawn on for use in another and how such cross-fertilisation influences object forms.

2.1b Ceramic-textile-metal relations

Cross-craft interactions can be considered at several levels. Direct relations can occur in the use of complementary materials, energy sources and component products from these crafts – for example the requirement of wood as fuel for ceramic firing and metal smelting. This leads to questions of competition, how access to such resources is justified and the prioritisation of one craft over another. This is particularly pertinent to ceramic production and metal-working. Both require large quantities of fuel – in the case of the prehispanic North coast, the *algarrobo* tree provides high-quality hardwood fuel which can achieve and maintain

appropriate temperatures. (Although both metallurgy and ceramic firing apparently did use a mixture of hardwood and substances like dung – Tschauner *et al* (1994: 372) found that guinea pig excrement was used as fuel with *algarrobo* in the Chimú ceramic workshop at Pampa de Burros, and Donnan (1998: 13) cites Luis Capoche (1585 (1959): 109-110) as noting that in early Colonial smelting, cattle dung was placed with wood). Goldstein and Shimada (2007: 53) question whether ceramic production and metalworking complemented or competed with each other concerning fuel supply at the Middle Sicán multicraft workshop at Huaca Sialupe, in the lower La Leche Valley. Previously Shimada (1999 unpublished paper cited in Sillar and Tite 2000: 11) had argued for Sicán cultural prioritising of metallurgy over pottery, with potters resorting to llama dung for fuel as a consequence of the depletion of hardwood resources by metalworking. However the 2007 study reversed this assertion. At Huaca Sialupe the authors found that ceramic kilns were clear of ash, despite experiments showing that each yielded up to 25 litres of charcoal after each firing, and suggest that it was removed for use in smelting furnaces. Analysis of furnace remains yielded organic material like leaves, textiles and sherds along with the hardwood charcoal (Goldstein and Shimada 2007: 61). It thus seems that fuel wood was reserved for ceramic-production - requiring the maintenance of 800 degree temperatures for reduction firing, while metal furnaces could use charcoal of varied origins. These data emphasise artisanal agency and independent negotiations regarding technical choices, rather than elite patrons and vested interest in one craft over another.

Cross-fertilisation among media also occurs at the level of knowledge and techniques utilised to manipulate different materials. Many previous studies have

considered crafts which are practised concurrently and share common processes within their production regimes. Various scholars have in the past suggested that high-temperature technologies developed synergistically owing to shared resources and processes (e.g. Matson 1989, Smith 1970). Much attention has been devoted to pyro-technological organisation such as glass, bronze and ceramic production (e.g. Smith 1970, Matson 1989, Rehren *et al* 1998, Rehren *et al* 2001), and similarly to associations between 'reductive' technologies like shell and ivory-working, stone-tool processing (e.g. Kenoyer and Miller 2007).

Concerning textiles and ceramics, the development of modern synthetic fabrics shows close influence from the ceramic medium. Such treatments as moulding into three-dimensional forms, embossing and coating can now be applied to cloth, with heat-transformations of these techno- fabrics producing new configurations which on cooling are completely stable (Braddock and O'Mahony 2002; 72). As far back as the Neolithic, in the Near East a direct technological relationship between basketry and pottery existed, in which baskets were used as moulds for clay vessels when ceramic technology first developed, continuing until coiling became common for vessels in the fourth millennium BC (Wengrow 2001: 177). More often though, it is superficial correspondences in designs between these media that are emphasised - since Semper's (1860, 1863 [2004]) writings on the role of textiles as the primeval art form from which all others derived their types and symbols. For example, the geometric designs on Neolithic pottery have been suggested to be influenced in form and dissemination by basketry (e.g. Mallowan and Rose 1935). Similarly, building on previous observations of painted pottery and woven textiles in the Mesa Verde region, Southwestern Colorado and Southeastern Utah, Ortman

(2000) argues convincingly how such cross-media transfers of imagery occurred. He shows how it was the conceptual structure of the textile medium (basketry and woven cloth) rather than physical textiles themselves, which structured painted imagery on pottery - the mental imagery of textile design was transferred onto ceramic surfaces.

However, breaking down the internal production sequences manifest in objects of cloth and clay reveals strong parallels between different techniques used to manipulate these two media, in more than matching designs. Correspondences between specific suites of ceramic and textile techniques have received little attention. This study, based on the technological repertoires developed on the prehispanic North Coast of Peru, addresses issues such as the extent to which different techniques allow or inhibit the pre-setting of iconography, how the points within production sequences at which iconography is emplaced vary across techniques and how different forms of relief effect might translate across materials (and I will argue that sculptural effects apply as much to cloth as to clay objects). Chapter Four discusses these in some depth.

In a formal sense, close connections between metal and ceramics have been discussed since the 1920's (see Vickers and Gill 1996:123, note 71) in the literature on skeuomorphs, suggesting that ceramic forms often imitate those of metal (e.g. Vickers and Gill 1996 regarding ancient Greek examples). For Pre-Columbian Peruvian artefacts shared formal traits have been noted particularly with regard to Sicán vessels (e.g. Rondon 1965-1966, Shimada 1998, Cleland and Shimada 1992).

These observations on ceramic-metal parallels tend to consider cross-fertilisations in the supply of raw materials and in high-temperature smelting /firing and then in the formal features of the finished products. Less attention has been paid to the how the intervening steps of working the metal, decorating it and assembling it might bear comparison with equivalent stages in the ceramic production sequence, and how specific techniques of the Chimú metalworking inventory might compare conceptually and formally with modes of manipulating clay.

2.1c Patrons, planners and artisans in state art

The creation of an iconographic programme or more generally, a 'style' in a state-level society is the result of interactions between the roles of patrons, designers and artisans in the context of the available materials and techniques, and of other crafts. Root's (1990) work on the iconography at Persepolis, articulating the artistic environment in which the architectural sculpture was planned and executed was a significant influence on this study. Root proposed a model to show the interactions of artists/artisans with patron and plan, emphasizing the technical and aesthetic problem-solving involved rather than focusing on the iconographic programme as an intellectual endeavour. Azarpay (1990) noted that the Persepolis reliefs, regardless of content, obeyed certain craft-oriented principles as much as the ideological demands of the patron. In analyzing Achaemenid Gudea statues the study showed that proportions of bodily parts were dictated by the dimensions of the modular diorite blocks used. Statues were conceived as tiers of superimposed blocks vertically reduced in the smaller Gudea figures. Rather than reducing the

precious diorite in order that the figure conform to canonical proportions, building blocks were simply missed out from the vertical elevation. Root's (1990: fig.12) graphic model uses intersecting circles to represent the relations between artisans' conceptualising and working processes; between patron requirements and the choices for technical and aesthetic representational solutions drawn from the artisans' repertoire.

The balance of such interactions in iconographic production will vary depending upon the role of a particular medium or material in the statecraft or ideology of a society. The Chimú invested materials such as camelid fibre, metallic ores, feathers and *Spondylus princeps* with great importance; acquisition of these valued resources influenced the nature of expansion of the polity, being one motive for the incorporation of the northern North Coast (Mackey 2009: 338). These resources were used to make luxury goods at Chan Chan, which played a crucial role in the reciprocity system that procured prestige items for the Chimú nobles and for conquered elites, ensuring cooperation of both parties during expansion (Moseley 1982).

The media of cloth and metal were of most significance in this reciprocity system. The interactions between the ideologically-based sphere of particular styles, images and symbolism in which the patron is active, and the realm of craft-based technical, stylistic and iconographic traditions involving artisan-designers and artisan-implementers (c.f. Root 1990: fig.12) might therefore be expected to differ from the relations involved in potting and wood-work.

Previous authors have commented upon the influence of the geometry of warp and weft on the forms which woven imagery may take (e.g. Semper 2004 [1860, 1863]: 227; Boas 1955: 82; Sawyer 1979: 129) but the extent to which such conditioning occurs varies with the technique. Some structures, as Brugnoli and Hoces de la Guardia (1995: 195) note, are particularly formally limiting – thus the technique known as sprang produces mirror images and double cloth produces figures with straight horizontal and vertical lines such that diagonals are made up of small steps. Tapestry and embroidery on the other hand subject the design to much less conditioning. This study will examine the relations between technique and iconography in Chimú and Chimú-Inka weaving, to determine the extent to which different images are subject to technique-led stylisation. While labour-intensiveness and yarn requirements have a strong bearing upon the choice of technique, the visual possibilities and restrictions offered by different methods should also be taken into account. Images such as the ‘crescent headdress’ figures so prevalent in Chimú and Chimú-Inka iconography occur in a wide variety of media and, tending to be highly standardised, probably played an active role in statecraft . The study considers whether this imagery is created using techniques such as tapestry and supplementary weaves which are subject to the least formal restrictions. This might be expected if politically-charged motifs and scenes – the headdress-wearing figures (human, bird and Moon Animal for example), litter-bearing and *Spondylus*-diving imagery – were subject to strong visual fidelity. If this is the case then other imagery in the Chimú repertoire which are not associated with political significance, such as the various birds, fish and geometric patterns

might be associated with alternative techniques such as the formally-distinctive methods of discontinuous warp and weft or double weave.

While the medium of metal is not a primary focus of this study some consideration of the extent to which craft-based principles, in relation to patron and designer roles, influence the formal appearance of objects and images in alloys of gold, silver and copper is instructive. Camelid fibre, gold and silver were used to manufacture objects bearing ideological content. These goods circulated as forms of political currency in the same cultural subsystem, and the extent to which patrons and designers could dictate their forms may then be comparable.

2.2 Fabric – structure and technique

This project highlights the potential of museum collections in archaeological study. Amongst the earliest works on collections of Andean material are those of Lila O’Neale (1946, 1947) who analysed the textiles from Max Uhle’s 1899 excavations at the North Coast site of Moche. O’Neale’s sample included some eighty fragments of cotton cloth from Site F (1947: 240). She cautions against deriving too much information from the appearance of a fragmentary textile, noting that it is impossible to tell whether ‘..it is or is not representative of the yarns, techniques, patterns or colours of the original web’ (1946: 270). The ‘primitive loom’ enabled abrupt shifts from one to another which may or may not involve colour and pattern variations. O’Neale notes that features such as the range in the lengths and widths of cloths, and pattern and colour are not indicated by the Uhle series (1947: 240). Her studies concentrate on the structure of the yarns – in terms

of the 'hardness' of twist (the number of turns per inch and the resultant angle of twist) – and what she refers to as the 'warp-weft techniques' (1947: 243). She discusses variations in plain weave cloth in terms of the number of warp or weft elements constituting the unit. Her 1946 work centred on twill weave cloth (eight pieces of which came from Site F at Moche) and here it is clear that O'Neale recognised a distinction between the structure of twill fabrics and the 'method of interlacing the weaving elements' which accounts for them (1946: 270-271). She realised that different methods could have been used to weave the twill fabrics and that complex heddling devices must have been involved (1946: 276-281) – discussed further below. This recognition laid the ground-work for archaeological analysis of textiles based on structure rather than method, advocated in later works by Irene Emery (1966 [1980]) and Mary Elizabeth King (1978).

Emery's *The Primary Structures of Fabrics* sought to classify the fabric structures of non-industrial textile products. Two main types of structures are identified: textiles 'composed directly of fibres of fibrous material' ('felted fibres') like bark cloth, felt and paper) and secondly, those 'produced by an ordered interlacing of elements' (1980 [1966]: 23). This second type is the focus of the book and is split again according to the number of elements used in the fabric and the way they are interworked. This gives structures built up with 'one single element', 'two single elements', 'one set of elements' and 'two or more sets of elements' (1980 [1966]; xx-xxi). Emery's classification starts from fabrics and their structures 'with as little reference to process (construction method) as possible, since structure inheres in the fabric and its elements and is almost invariably ascertainable' whereas evidence

of process is seldom retained' (1980 [1966]: 23). Process is considered a secondary factor.

There are advantages and disadvantages to such a classification system when compared with one based upon construction methods. Different techniques can be used to create the same structure – for example structures with interlacing elements can be made by hand or on a loom and so do not belong in the same technical category. Equally, in Emery's system each structure does not have one definite place – the same binding systems (structures) of interlocking and/or interlacing are present within forms made of one element, of two single elements and of one set of elements (Bühler 1968: 408).

The use of structure as an analytical concept was also advocated by Mary Elizabeth King in her (1978) paper suggesting procedures for recording archaeological textiles. She points out that 'while the 'structure' of a fabric can be observed, the 'technique' or method of manufacture, cannot always be inferred from the structure. Often several quite different techniques will produce visually identical results (1978: 91).

Anne Pollard Rowe's works on textiles in US and other institutions (e.g. 1978, 1980, 1984) through which she defined the main features of Chimú and Chimú-Inka weaving are also concerned with structure but an awareness of the implications of technique and process is apparent in her studies. For example, her 1980 analysis of the textiles excavated from the burial platform of Las Avispas at Chan Chan classifies cloth by structure. Plain weave is the first, which is sub-divided into categories depending upon the number of elements used – paired warps with

single weft, paired warp and weft, single warp and weft (1980: 87-89). In her discussion of weft-faced stripes and supplementary weft patterning (1980: 89-92) she details the different techniques which might have been used to create these structures. Process is also apparent in her section on plain-weave-derived float weave structures (1980: 94-95) where the method of omitting some interlacing on a loom set up for plain weave, creates floats of varying spans. These floats are aligned in rectangular arrangement unlike the diagonal layout which is a feature of twill weaves. A consideration of process (rather than structure alone) allows one of the main differences between twill and plain weave to be drawn out. This relates to progression – O’Neale (1946: 271) details how the twill weft in passing across the web of cloth moves one or more threads to the right or left of each previous intersection with the warp, regrouping the warp threads and forming a step in the diagonal ridge developing upward. O’Neale also draws attention to the calculation and planning required in creating a twill weave in terms of the divisions of the warp elements. She infers that warps would have been allocated to sometimes multiple, heddle devices to allow control of the separate warp groups required to create the complex twill structures analysed (1946: 279). She details several methods which could have been used to create these twill structures, the first two being characterised as elemental finger weaving procedures. Her second method involves the use of four small pattern sticks which she infers would have been placed in proper sequence to raise the required warps for the first half of the pattern, then repeated four times before the whole procedure was undertaken again for the second half of the pattern involving the raising of new warp groups (1946; 277). Her third method involved equipping the backstrap loom with two

supplementary heddles used together with the regular heddle and shed roll of the loom. As she notes this third method would entail significantly less weaving time which would far outweigh the likely effort involved in setting up the extra two heddles (1946: 278). These feats of planning and organisation contrast strongly with the process of weaving cloth with supplementary-weft patterning. Here the weaver simply proceeds to the point where variation in appearance is desired and supplements the basic weft elements with yarns of contrasting colour or size to create the pattern. As O'Neale (1947: 245) notes, the structure of the fabric remains practically unaltered and continues to grow independently of the design.

Process and method, rather than structure, will be primary concerns of this current study which aims to elucidate and relate the steps involved in working, decorating and assembling metal and clay to those of the construction of different types of cloth. While the calculation and planning required for the production of complex cloth structures such as twill and DWW can only be inferred, a consideration of process and technological behaviour reveals close parallels in the creation of imagery and objects in the media of cloth, clay and metal. Technical choices are never made in relation to a single isolated technology. Different techniques within a society refer to one another, sharing the same resources, knowledge and actors; in some cases products of one technique are used with another, and operational sequences and technical principles may occur in common producing multiple interdependent connections (Lemmonier 1986: 154). Thus much Old and New World material culture are 'composites of products, knowledge and/or techniques' – but derived from what are analytically treated as distinct crafts (Shimada 1998: 28). Given this systemic nature of techniques within a society

then, any specific craft being studied should be considered in relation to other crafts practised concurrently.

2.3 Process and 'technological style'

Lechtman's (1977) work raised the concept of 'technological style' in examining how Andeans created various copper-based alloys, developing them to impart the colours of silver and gold on the surface. While gilding and silvering methods - electrochemical replacement plating for example - were in use on the Early Intermediate Period North coast (see Lechtman 1984: 17-20), it was the creation of binary and ternary alloys of copper, silver and gold which was the most important means of manipulating the surface colour of metal. This alloying in combination with a propensity for forming metal by working rather than casting resulted in copper-based objects which appear silver or gold. The mechanism by which this is achieved is termed 'surface enrichment' and is a necessary result of hammering, annealing and removal of surface copper oxide (Lechtman 1984: 22). For Lechtman the important distinction between this method of obtaining a silver or gold surface and that of gilding is that with the first, the surface metal is present within the body of the object. She terms this the 'incorporation of the essence' (1977:10).

Lechtman (1996) identified a North Coast propensity to render form by means of manipulating planar expanses of material. She was referring primarily to the use of sheet metal but also made the suggestion that because metal objects acted as vehicles of ideological content in the same way that fine cloth did, both media may have been subject to the same style of technological behaviour (1977: 15-16; 1993:

271-273). My suggestion is that the action of beating of raw cotton fibres into a flat plane for spinning is analogous to the hammering of sheet metal out of ingots. This former process, documented by Vreeland in the 1960's on the Peruvian North Coast (Vreeland 1986: 367), contrasts with the treatment of camelid fibre in the highlands (Dransart 2002: 101-126). One cannot assume that indigenous weavers in the past would have regarded finished cloth as consisting of a flat plane. Ethnographic evidence suggests rather that weavers think of their cloth in terms of an object through which interlacing yarns move in space (see the work of Dransart 1995: 228-229 and Arnold 2014: 1). The beating action involved in the initial processing of the cotton fibres and the alloyed metal does however appear similar. I consider this tendency to work materials in planar sheets to be the foundations of a coastal suite of techniques applying to metal and cloth, but also to clay. The overwhelming choice of moulds to form vessels required clay to be manipulated in flat, malleable sheets as opposed to in coils or creating vessel parts modelled directly from lumps of clay (see Chapters Seven and Eight for a full discussion of the ways in which primary processing, secondary and assembling techniques translate across media).

Artisanal attitudes to the materials worked are thus the basis for the technological performances involved in craft production. The choice of working metal via plastic deformation (rather than casting which would involve manipulating metal in a liquid state) was closely associated with the control of colour, which in the case of gold and silver was used in the visual representation of status and power. The use of individual two-dimensional sheets as stock elements from which three-

dimensional forms were constructed also imparted a strongly 'assembled' aesthetic quality to metal objects of all types (e.g. examples in Boone 1996). By virtue of numerous attached 'danglers' and pendants, flat masks and pectorals took on as much of an architectural quality as three-dimensional figures and vessels. It is apparent that cultural constraints deemed it appropriate to construct objects from thin and uniform sheet (Lechtman 1996: 507) in much the same way that the proportions of the Achaemenid Gudea statues referred to above were conceived of in terms of superimposed blocks of diorite. Both media acted as vehicles of strongly ideological content and in both cases the aesthetic canons are firmly rooted in craft-based principles. In the Andes this propensity for rendering form by means of creating and manipulating planar sheets of pliable material extended to other areas of craft production, particularly (as is discussed in Chapter 6) those of weaving and potting. The management of planar expanses of materials constituted in Lechtman's words 'a technological style of considerable chronological depth and high cultural commitment' (1996: 509).

From a 'bottom-up' perspective, such cultural commitment would be seen as artisan-led in that it is the technical choice of working a material in a particular way that determines how an object – whether 'made-to-order' or 'off-the-shelf' – looks. However if this concept of the North Coast technological style is considered within the framework of production organisation, it is apparent that assembling objects from stock sheet – metal or cloth – makes the manufacture process highly suited to being divided into a production line system. Topic's work at Chan Chan (1982, 1990) showed that this is likely to be the case for metalworking at the capital – metal ingots occur in single-family *barrio* residences indicating that initial sheet

formation occurred here (1990: 155), while the retainer areas adjacent to palace compounds showed more evidence of delicate finishing work (1990: 159). Certain Chimú textiles – namely fine tunics, loincloths and headbands – also adhere to such an organisation of production, featuring applied bands, tassels, panels and sometimes plaques of metal or shell. While the North Coast technological style had sufficient antiquity (for example sheet gold was in use during the Early Horizon (Lothrop 1941, 1951) that it was certainly not imposed by the residents of the palaces of Chan Chan, these patrons utilised it in developing a highly efficient system of luxury goods production with a prolific output and a distinctive style.

2.4 Colour

Previous work examining the use of colour in Pre-Columbian textiles has tended to take one of two approaches. The first set of literature focuses on technical analysis, identifying dyes and pigments and began with the work of Gustavo Fester in the early 1930's analysing cloth from archaeological sites (e.g. Fester and Cruellas 1934, Fester 1954). The period between the 1960's and the 1990's saw further technical research on Andean textiles mainly developing and testing identification methodologies (e.g. Saltzman 1978, 1992; Michel and McGovern 1987). The work of Wouters and Rosario-Chirinos (1992) examining textiles from seven different cultures in the MNAAH, Lima allowed initial insights into the temporal development of Andean dyeing technology and in 2002 Boytner *et al.* used a technical analysis of cloth from northern Chile to examine the evolution of dyeing in the Azapa region.

A major step forward in the research of Andean colourants was the founding of the Andean Dye Research Project in 1992, as a collaboration between the Getty Conservation Institute and the University of California at Los Angeles. 1500 dye samples with known provenance and context have been analysed including a group of more than 200 textiles from the site of Pacatnamú (Boytner 2006). This work is particularly innovative because while the techniques and materials utilised to produce colourants are the focus, Boytner was able to use the results to study dye distribution in relation to social organisation at Pacatnamú.

The second approach to studying colour in Andean textiles does not rely upon technical analysis of dyes but rather examines the colour patterning in textiles. One of the earliest observations of sequences of colour repeats in Peruvian cloth was made by Boas (1955: 38, 46) in his writing on symmetry and rhythm in patterning. Subsequent studies of colour patterning include those carried out on Middle Horizon tunics (e.g. Stone-Miller 1994; Bergh 1999) and Paracas mantles (Paul 1986, 1990, 1994).

Several Chimú fabrics were included in Wouters and Rosario-Chirinos' (1992) study but the use of colour within Chimú weaving has received little attention. While not incorporating technical analyses of the colorants used in the textiles examined (although a 3-year project undertaking such analytical work on the Andean textiles of the British Museum began in 2011), this study will compare the variation in use of colours in fabrics of different materials and techniques. It will argue that the presence (or absence) of different colours is an important indicator of the productive environment in which these pieces were manufactured (i.e.

household versus retainer workshop, and the level of state involvement). Colour differences also help to assess the role which different fabrics played within the various subsystems of Chimú culture (e.g. ideological or political), and among which population strata they circulated or mediated between – those of elite or commoner, conquerors or conquered.

2.5 Ceramics and the Production Step Measure

This study, though centring on two media – textiles and ceramics – develops a methodology which is applicable also to metalwork and those ‘multimedia’ pieces involving combinations of materials. Feinman *et al.*’s (1981) Production Step Measure (hereafter, PSM) was selected as the analytical tool in this study because of its suitability for recording production sequences and allowing comparison of media and technologies. The methodological procedures used in this project are fully described subsequently in Chapter Four but at this point it is necessary to introduce the PSM and explain its utility.

In the early stages of this project when the textile and ceramic material were being catalogued the technical production processes observed were initially recorded in ‘primary’ and ‘secondary’ categories. These were taken from Donnan’s (1965) work on Moche ceramics where he distinguished between primary forming techniques used to create vessels and the secondary methods used to decorate them. To allow comparison across media and materials a more refined breakdown of the technical procedures involved in the creation of different textiles and vessels

was required. The PSM allowed a sequential tabulation of the production processes applied to Chimú and Chimú-Inka cloth and clay goods.

Feinman *et al.* (1981) developed the PSM based upon ethnographic studies which described the tasks involved in the production of non wheel-made pottery. The measure was devised for the analysis of potsherds since complete vessels generally account for only a small proportion of excavated material. One point is essentially tabulated for each step in the manufacturing process – painting, slipping, burnishing, smoothing and incising for example, but the actual shaping process is not considered as a production step on the grounds that all vessels undergo this (1981: 872). Feinman *et al.* used their data to provide quantifiable justification for distinctions such as ‘fine’ and ‘coarse’ pottery and to identify potential intervening categories in their material from the American Southwest. The system has several limitations, the most important one being that it ranks all production steps equally (1981: 873). It is therefore an ‘ordinal index of production costs’ focussing on the number of steps required in a production process (1981: 872) rather than the absolute labour costs involved in producing objects. In the version of the PSM which I developed for use with textiles it is important to acknowledge the difficulty I had in attempting to account for the inferred design planning, calculations and setting up of the heddles which must have been used to create some of the textiles I examined – discussed further in Chapter Four with the presentation of the textile version of the PSM.

A second limitation surrounds that of iconographic analysis with the PSM where for both textiles and the ceramics I found it difficult to index the complexity of

iconography with any degree of accuracy. It also does not allow for any interpretations of imagery (and I detail in Chapter Four the system according to which imagery was classified and assigned a complexity value). However, the PSM was of significant use in its ability to index the production demands for different objects in terms of the number of steps involved and the approximate (if not absolute) work required. It also allowed comparisons of the points in the manufacturing sequence where features such as imagery and colour are added.

The extent to which the manufacture of Chimú and Chimú-Inka goods was segmented into discrete steps is made particularly apparent in the PSM data. This mode of production, reflected also in the form of the objects (for example textiles composed of multiple components – webs of cloth and additional tassels, appliqués etc.) and in archaeological evidence at production sites, is discussed in Chapters Seven and Eight. It builds upon Moseley's (1975) paper which suggested that a sectional nature characterised North Coast architectural construction as far back as the Moche period.

CHAPTER THREE: CRAFT PRODUCTION IN THE CHIMÚ STATE

3.1 Chimú culture

This chapter provides an overview of Chimú culture, organisation of craft production and the involvement of the state. It begins with a discussion on previous archaeological work, social structure and deities before focussing on the organisation of Chimú crafting and the extent to which the production and reproduction of imagery could be regulated. The chapter then discusses craft production within the context of Chimú, and subsequently Inka, expansion on the North Coast before outlining the study's relevance to current research in North Coast archaeology. It closes with a section on the data-set including the collections studied in the British Museum and in the Peruvian institutions in light of the previous discussion on archaeologically-evidenced craft production.

3.1a Chimor

The past fifty years has seen extensive archaeological research investigating the statecraft, social structure, craft production and religion of the Kingdom of Chimor (this term derives from the original 'Chemjoer' of the Quingnam or Chimú language, converted into 'Chimor' in the oldest of the colonial documents (Zevallos 1991: 68 cited by Piminchumo 2004:7). This includes the work of the Chan Chan-Moche Valley Project (1969-1974) that has been very influential in its promotion of a certain model of Chimú social organisation and administration. This was based

upon analysis of the architecture at the capital city Chan Chan, settlement patterns in the heartland and artefacts recovered from the city and surrounding sites (papers in Moseley and Cordy-Collins 1990; Moseley and Day 1982). Subsequent researchers emphasised provincial centres and smaller settlements (e.g. Mackey at Farfán and Algarrobal 2003, 2004; Tschauner at Pampa de Burros – Tschauner *et al.* 1994, Tschauner 2006; Hayashida 1999, 2003 at Tambo Real and La Viña).

The capital city Chan Chan occupies some 20km² of flat coastal plain adjacent to the Pacific Ocean at the mouth of the Moche River Valley. Its inhabitants numbered 30 to 40,000 among which, in the final phase of the city, ending with Inka conquest, it is estimated that there were up to 12,000 full-time artisans (Topic 1990: 149). Chan Chan's architecture and organisation give some understanding of Chimú imperial administration and social order, with the significant differences in scale and complexity of the four classes of architecture present at the capital reflecting social inequalities.

The four main types of architecture characterising the city are (i) enormous walled compound or palace called *ciudadelas*, (ii) smaller elite compounds built of adobe, (iii) commoner residences known as SIAR ('small, irregular, agglutinated rooms') and (iv) four large mounds or *huacas*.

The ten *ciudadelas* are the dominant feature of Chan Chan's urban environment and have been interpreted as palaces constructed sequentially by the Chimú kings (e.g. Day 1982, Kolata 1990, Moseley and Mackey 1973, Pillsbury and Leonard 2004). They consist of vast enclosures surrounded by adobe brick and *tapia* walls up to nine metres high. *Ciudadelas* were multifunctional spaces, the plazas of

which were settings for funerals and ancestor-veneration at the death of a king, as indicated by Chimú wooden architectural models complete with wooden figures (e.g. Jackson 2004, fig.3: 304). They acted as monumental warehouses, housed royalty and retainers, and upon death, housed the burial platform of the king. Topic and Moseley (1983) describe the features of the 'classic' ciudadela, the final stage of a long developmental sequence of the monumental enclosure (1983: 154). There was a single entrance on the North-facing side and internal access was highly restricted. As Moseley and Mackey (1973: 333) noted, interior doorways could only admit one or two people at a time, and corridors with entrances at each end were rare; doors were similarly placed to keep pedestrians on a twisting course.

One architectural component associated with the compounds but also occurring throughout the city is the U-shaped structure. Three basic types have been identified (*arcones* with bins, *trocaderos* with troughs and *audiencias* with niches) and have been the subject of much discussion in the literature (e.g. Day 1982, Kolata 1990, Topic 1990, Topic 2003). Owing to the apparent association of U-shaped structures with storage areas in ciudadelas they have been interpreted as being 'administrative' in nature, used to control access to such areas (Day 1982, Kolata 1990: 124, Topic 2003, but see Moore 1992 for an account which questions this).

A final feature of the classic ciudadela is the burial platform usually located inside the compound either in the central or southern sector, with the exception of Las Avispas which is located adjacent to the northeast corner of Ciudadela

Laberinto. Excavations at Las Avispas yielded a large sample of textiles analysed by Rowe (1980) and discussed in Chapters Four and Six.

The urban lower class, making up the vast majority of Chan Chan's residents, occupied barrios of dwellings and workshops built of stone and adobe foundations with cane-and-reed walls (Moseley and Mackey 1973: 328). SIAR form clusters incorporating kitchens, living areas and workshops in which metal-working, textile production, wood- and shell-working took place (Topic 1982, 1990). The residents of these barrios formed one group of the lower class at Chan Chan; two others include those classed as retainers to the nobility who lived on platforms adjacent to the compounds and a group of part-time residents, 'transport workers' (Topic and Moseley 1983: 155). These groups are distinguished from the nobility by the lack of dedicatory human burials and from the rural lower class by larger, better quality residences, particular economic roles and the presence of ear tubes (Topic and Moseley 1983: 155).

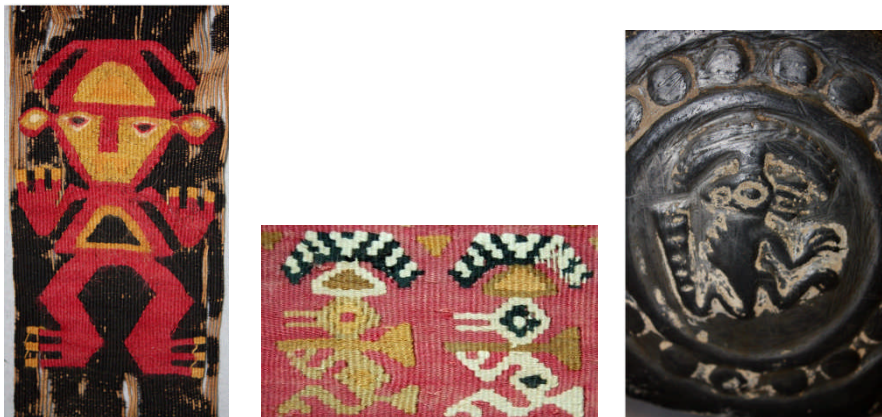
3.1b Chimú deities

The three principal Chimú deities with which this study is concerned are the Crescent Headdress Figure, the Moon Animal and the Chimú Goddess. Depictions are standardised and they occur on textiles, ceramics, metal objects and adobe friezes, with the exception of the Goddess who seems to be represented only in the ceramic medium (Moore and Mackey 2008: 800).

The Crescent Headdress Figure is shown standing, front-facing and wearing round ear ornaments, a collar or necklace and a loincloth. He wears a crescent-shaped headdress which sometimes shows feathers clearly delineated and which in other cases is plain. This iconographic device is suggested to have originated in the crescent-shaped ornament placed on top of the helmet in Moche costume (Bruhns 1976: 32) and throughout the Middle Horizon it becomes enlarged until this ornament rather than the helmet becomes the main element of the headdress. Bruhns notes that although this headdress was initially seen on both representations of humans and 'minor supernaturals' it, along with a headdress featuring double streamers (see below), becomes the major headdress seen on supernaturals in general (1976: 32). Although it seems to be applied to the Moon Animal (discussed in the next paragraph) in this context and possibly birds, I would not necessarily suggest that the Crescent Headdress Figures shown on cloth, pottery and metalwork are always 'supernatural' given that these figures often lack staffs or other accessories which could be taken to bolster an otherworldly identity. In some cases the figure appears standing on an anthropomorphised platform with snake-like appendages emanating from the platform and hands, and the mouth features zigzag markings which could be taken as fangs (see Stone-Miller 1994, pl.60). In other cases though the Crescent Headdress Figure is shown with smaller subsidiary figures perhaps indicating a power relationship but not necessarily a mythical one. The Crescent Headdress Figure appears in two versions on textiles, identified by Rowe (1984) as the Toothed and the Plain Crescent Headdress Figures (Fig.3.1 below). The latter she relates to the period of Inka *aegis* on the North Coast on the basis of archaeological associations. The cloth excavated at Chan Chan

by John Topic is of the Toothed Crescent style (Rowe 1984: 452) and so Rowe assigns this to the late Chimú period.

The Moon Animal has a long history on the North Coast appearing at the beginning of the Moche period, although not until Moche III does it appear in association with lunar or astral symbols. It persists through Chimú and Inka iconography and into the Colonial period in the same basic form, which is that of a quadrupedal figure shown in profile with a long tail and crested head (Bruhns 1976: 21) (Fig.3.3 below).



**Figure 3.1 (above left): 1954,05.477, British Museum, L: 66cm, W: 7cm.
Figure 3.2 (middle): 1896, 509, British Museum, L: 38cm, W: 87cm.
Figure 3.3 (above right), +2802, British Museum.**

The Moon Animal is thought to have originated in depictions of a zoomorphic figure on the pottery of the Recuay culture which flourished in the highlands inland from the North Coast valleys between around 0 and 500AD (see Table 3.1 below). These figures are shown in profile, seated and with a humped back, long muzzle and prominent teeth and tongue; a crest is shown issuing from the head. Bruhns (1976: 29-30) considers this crest, plain or decorated, to be the commonest form of

‘supernatural signifier’ for animals in Recuay art. Representations of the Moon Animal are particularly frequent painted and press-moulded on ceramics of the Moche III and IV periods (Bruhns 1976; 30). Renditions of this figure also appear throughout the Chimú period where the crest is replaced with a crescent headdress.

Time Scale	Periods/ Horizons	North Coast	Central Coast	South Coast	North Highlands
1500	LATE HORIZON	INCA	INCA	INCA	INCA
1250	LATE INTER-MEDIATE PERIOD	CHIMÚ	CHANCAY	ICA	
1000	MIDDLE HORIZON	LAMBAY-EQUE			
750					
500		MOCHE	WARI		
250	EARLY INTERMEDIATE PERIOD			NASCA	RECUAY
AD		GALLINAZO			
BC		SALINAR			
500	EARLY HORIZON	CUPSINIQUE		PARACAS	CHAVÍN
1000	INITIAL PERIOD				
2000					
4000	COTTON PRE-CERAMIC				

Table 3.1 Time scale showing main cultures in coastal and North highland Peru (based on Stone-Milller 2002 [1995]: 8)

The Chimú Goddess is a female figure shown nude and with minimal facial features which are standardized. The eyes are sometimes comma-shaped which Moore and Mackey (2008: 800) suggest indicates a feline association. She is depicted bearing different objects such as spindles with yarn and infants in cradleboards and when modelled atop spout-and-bridge vessels is associated with designs symbolising the moon and the sea. There appear to be no representations of her in textiles, only ceramics.

The fact that these deity figures – Crescent Headdress figures, Moon Animals and Goddesses – are represented in a variety of media suggests that they were available to different portions of Chimú society. Portrayals of the first two figures on adobe friezes inside the Chan Chan compounds would likely be restricted to viewing by the elite members of society and likewise for renditions on fine cloth, ceramics and metal goods. However particularly in the Inka period the Crescent Headdress figure comes to be frequently represented on lower quality cotton cloth (discussed in Chapters Five, Seven and Eight) such that its audience may have changed. The Goddess, in her appearances only in the ceramic medium and her association with child-rearing and spinning, was perhaps widely available to all parts of Chimú society (Moore and Mackey 2008: 801).

3.1c Chimú crafts: fibre and clay

Chimú craft production - particularly in its later stages following the subjugation of the Lambayeque area, and then under the Inka occupation – reached an unprecedented scale that is apparent in the great quantities of surviving cloth,

metalwork, shell, feather and woodwork, and the many millions of ceramic vessels and fragments. Previous authors have noted the increased levels of production and standardisation in this later material (e.g. Young-Sanchez 1994: 45; Cordy- Collins 1996: 224). Chimú cloth became one of the most stylistically influential lines of goods in coastal Peru, prompting various hybrid styles down the Central and South Coast before merging with (and influencing) Inka textile canons. From around 4,500 years ago native Peruvian cotton became the main textile fibre throughout the coastal region (Vreeland 1986: 364). Camelid fibre was not used in locally-produced North Coast textiles until well after the main impact of the Chavín culture (Conklin 1978: 8) although it began to be used much earlier in the Paracas textiles of the South Coast. Camelid fibre is thought to have been imported to Chan Chan in pre-spun and dyed skeins from the highlands, prior to redistribution and use in the production of high quality cloth. The vibrant colours which camelid fibre is capable of attaining together with an apparently high level of state control over its distribution and use, enabled a distinctive colour palette to be maintained in elite cloth. There is a strong contrast with locally-produced cotton, the yarns of which are highly un-standardised in both construction and colour unlike camelid fibre. There is a relatively limited range of colours of camelid fibre selected for Chimú weaving (reds and golds in particular) compared with the great diversity of natural and dyed shades evident in e.g. Paracas and Wari cloth. This study uses material, colour, technique and imagery to evaluate the level of state involvement and the likely production context of different types of Chimú cloth.

Chimú pottery is highly visually and technically distinctive and would seem - given its ubiquitous nature and apparent homogeneity, standardisation and

substitutability - to fit the term 'branded commodity' (as defined by Wengrow 2008: 12). However, this study questions the extent to which this concept of branded commodity fits with the interpretation of Chimú material. The Chimú use of two-part vertical moulds as the primary forming technique was inherited from the preceding Moche culture. During the Cupisnique, Salinar and Moche periods of the North Coast only the more elaborate grave vessels were formed in moulds with everyday cook pots being largely constructed by coiling (Collier 1955: 125). Throughout the Tomoval, La Plata and Estero periods of the Virú Valley however, (equivalent to Chimú and Chimú-Inka), Collier found that the mould became applied to all types of pottery which he interprets as increasingly tending towards mass-production, and to the secularization of art – as distinct from the Moche period (1955: 135 and 139). The Chimú period saw a shift away from the use of paint in combination with moulded imagery, which characterised Moche vessels, such that the entire vessel and its imagery came to be incorporated in the mould (particularly from Collier's La Plata or Late Chimú period). The mould was used to produce distinctive Chimú trademarks such as relief stippling and sculptural chambers, fired black negating the use of paint. Mould use can be seen as an efficient means of producing standardised vessels ensuring fidelity to particular images, consistent with the substitutable nature of branded goods. However Chimú vessels are not always manufactured in such an 'all-inclusive' manner. The points in the production sequences where imagery is determined must be considered – in the matrix, mould or during post-mould re-working (using incisions, modelling or paint) - to assess how artisanal input can balance the control exerted on the form of individual vessels by the use of moulds.

3.2 State involvement in Chimú crafting

3.2a Statecraft and production

Craft production is an economic activity that can be heavily exploited for the establishment of hierarchy and the manipulation of subject populations by ruling elites. This is expressed in Earle's (1994: 445) concept of 'wealth finance', defined as the use of valuables – objects which have acquired value from the materials, skills and knowledge involved in their manufacture – as means of political payment. This rests on the ability of an institutional group to control the production and circulation of this wealth.

Craft production underpinned several principles of Chimú statecraft. One of these principles, identified by Mackey (2009: 338) and closely related to the form taken by Empire expansion, was the acquisition of valued resources including metal ores and *Spondylus princeps* from the northern North Coast of Peru and the southern coast of Ecuador. This area had an important role in Chimú mythology – it is most likely that this is the provenance of the legendary founder of Chimor, Tacaynamo, who it is said was sent to govern by a great lord from across the seas, arriving in the Moche Valley on a balsa raft as used in the Gulf of Guayaquil region (Rowe 1948:39). Thus the motivation for the takeover of the area north of the Jequetepeque Valley may have been ideological in part, adding to the economic and political value of these materials with mythical affiliation (Mackey 2009: 338). These resources were turned into luxury goods in the palace workshops at Chan Chan and used to satisfy elite appetites for sumptuary hardware.

Two of the other principles of Chimú statecraft discussed by Mackey (2009: 345) are the use of joint rule and the use of both direct and indirect rule in the same valley. With regard to the first, it was a key policy not to unseat local indigenous lords; a collaborative ruling effort is suggested at two of the regional centres, Manchan and Túcume where the local nobility continued to reside in vernacular architectural compounds alongside the Chimú structures. Tschauner *et al* (1994: 378-379) show that ceramic production at the site of Pampa de Burros in the Lambayeque Valley was locally managed (due to the lack of architectural features such as *audencias* and storage areas which at Chan Chan are considered to be associated with production supervision, and also in the lack of a nearby administrative centre). It is apparent that at the regional centres, local-style goods persisted alongside canonical Chimú pieces (e.g. Mackey and Klymyshyn 1985: 276-277 for textiles at Manchan; Narvaez 1995: 93 for Chimú vessels and Lambayeque wooden earspools). While deposition of Chimú state-issue pieces and the raising of architecture conforming to Chan Chan canons implies direct rule materialising the state presence, allowing continuation of local craft production was equally important in matters of Chimú diplomacy conferring some degree of autonomy on subject peoples and encouraging cooperation.

Such a role of craft production in conferring a degree of household or community autonomy is a theme noted by Schortman and Urban (2004: 197). Within Chimú society household production probably accounted for a large proportion of goods, particularly utility pieces made of locally-available raw materials such as cotton and clay – e.g. the textile production documented at the village of Cerro de la Virgen, 5km NW of Chan Chan (Keatinge 1975) as well as the cloth and metal activities in

the *barrios* of the capital (Topic 1982, 1990). An extensive system of household production would be a necessary complement to the manufacturing of sumptuary goods of metal, shell and camelid fibre in the retainer workshops at the capital. This study argues that certain types of Chimú cloth reflect independent production – household or perhaps within a guild-like context as Espinoza (1987: 59) identified for independent artisans operating on the North Coast during the Inka period. Hereditary occupations and the consequent passing down of skills and techniques through generations within the tight confines of a guild would be a likely framework for the maintenance of such complex cloth techniques as discontinuous warp and weft (DWW). As discussed below this technique is strongly related to the use of locally-available cotton (rather than camelid fibre). Such *virtuoso* cloth would seem to be produced outwith state auspices but the study will suggest that it played an active role in shaping Chimú canonical imagery.

3.2b Production organisation and state involvement

A discussion of the means by which craft production was regulated requires some consideration of labour management in general – of large-scale public projects such as *ciudadela* and canal construction in the Chimú case - as well as that relating to object manufacture. With respect to the Inka state labour management was highly orchestrated and the relocation of populations wherever labour or goods were required was a state policy. It seems likely though that certain principles of Inka socio-economic organisation were similar to or even derived from, the Chimú model – the organisation of state lands, use of tribute labour, production

organisation and redistribution of goods (Keatinge and Day 1973: 291). Moseley (1975) proposed that large-scale construction projects in the Moche Valley undertaken by the Chimú were executed by means of parties of workers fulfilling labour tax obligations owed to the authority initiating the project. This has parallels with the subsequent Inka *mit'a* labour tax system which was based upon the amount of time devoted to tasks such as the weaving of garments – rather than the scheme imposed by the Spanish which was based upon the amount of goods produced (Niles 1994: 52). To some extent labour was being conscripted rather than products. Moseley suggests that Chimú construction projects were characterised by ‘segmentation’ involving division into repetitive modular units assigned to groups of labourers (1975: 193). He bases these conclusions upon wall segmentation at Chan Chan (and also the Moche pyramids of Huacas del Sol and de la Luna) evidenced by brick compositions and makers’ marks. However as discussed above, similar principles seem to characterise Chimú craft production, particularly that of cloth and metal goods. With respect to the former, Chimú garments – in strong contrast to Inka tunics which are of single-textile construction – have rather an ‘assembled character’ (Young-Sanchez 1994: 48) in that bands, panels and patches of imagery-laden tapestry are often appliquéd onto a separate plain weave ground cloth. Numerous Chimú weavers were probably involved in the various production steps rather than a single weaver (or weavers) producing Inka tunic fabric to the required dimensions in an essentially single production step. Such ‘production- line’ construction may extend to other techniques in the Chimú repertoire such as supplementary weave cloth, featherwork, cloth with appliquéd metal or shell plaques, and painted cloth. Each of these techniques subdivides the

construction process allowing supervision of the necessary iconography-embedding stages which are separated in time from the weaving of the plain backing cloth (this is discussed in more detail in Chapter Five). It would seem then that the underlying principles of Chimú labour organisation, segmentation in modular units, is reflected in a range of specific categories of (usually 'luxury') goods.

Craft production can be controlled at several levels outwith that of labour organisation to ensure that material, quality, stylistic consistency and technological standards are maintained and that the output of certain goods and their distribution can be directed. These objects can be achieved by regulation at the technological 'hardware' levels of access to raw materials, at the 'software' levels of access to specific knowledge and skills, and in the spatial organisation of craft production.

In considering how access to raw materials and resources were restricted in the Chimú case, the concepts of 'property' and 'ownership' become pertinent; a brief discussion of Costin's (1998a) study of property and non-agricultural resources in the Inka empire is instructive.

Three systems of real property ownership and access to subsistence goods operated within the Inka Empire. These were (i) a communal ownership system based on *ayllus* – localized corporate kin groups, (ii) an institutional system whereby the Inka state imposed its ownership of all productive resources, and (iii) individual ownership in which land or other resources were allocated to symbolise rank or reward (1998a, 120). Costin considers ceramics and metals in looking at the degree of separation between state institutional and local community raw

materials and resources in the Yanamarca Valley area. Regarding clay and temper sources, a strong division is apparent between those utilised by local and Inka styles. It appears that the Inka occupation period saw development of new clay sources, implying continuity for indigeneous ceramic resource use, and property regimes (1998a: 125). The same seems to apply to metal resources, with (in Bolivia at least) the state and local populations owning different gold and silver mines, with the Inka tunnel-and-gallery extraction being more productive than local exploitation of scattered river deposits (Bethelot 1989 cited in Costin 1998a: 127). Silver and gold were under tight control in the Inka Empire and this appears to have been partly attained through manipulation of local access to copper and bronze. Tin, (which unlike copper ore is spatially restricted in the Andes), added to copper increases the workability of the latter. It had to be directly supplied to artisans to but such promotion of bronze enabled the state to co-opt the silver it replaced (Costin 1998a, 130). The amount of copper (bronze) quadrupled after the Inka conquest while silver levels dropped by half owing to the state siphoning off this precious material (Costin *et al* 1989: 129). It seems probable that the Chimú elite would also have attempted to monopolise the distribution of resources such as metal ores obtained from the highlands, given the cultural significance of gold and silver but it is uncertain how such control over resources would vary in terms of state/community distinctions, and state institutional divisions. For example Costin (1998a: 130) notes that Spanish chroniclers describe how different resources were co-opted by military and civilian administrations, and religious institutions within the Inka Empire. Gonzales Corrales (cited in Kendal 1985: 49) suggested that different types of masonry in Cuzco can be identified with separate quarries,

implying that different sponsors controlled certain properties. The question arises to what degree did state institutions and elite individuals operate independently with regard to resource control?

Camelid fibre was another resource subject to the strictest control in both the Chimú and Inka states. A marked division in state versus community resources is evident in the Inka distribution of raw materials for the weaving *mit'a*. As Polo de Ondegardo records, 'no Indian contributed (to the state) the cloth he had woven from the community's wool for his own garments' (Pachacuti Yamqui Salcamaygua (1613) 1927: 147, cited in Murra 1989: 286). Are similar state/non-state divisions evident in Chimú textile fibres? Rowe (1980: 86; 1984: 25) points out that alpaca yarn at Chan Chan is highly uniform in terms of spin, twist, ply and colour suggesting that it was brought to the city pre-spun and dyed, and distributed. Bruce (1986 cited by Topic 1990: 168) points out that there is a close similarity between alpaca yarn used in the textile miniatures at Pacatnamú, and that used in textiles from Chan Chan. Considering its use in Chimú textiles, it appears only to have been employed for decorative purposes (i.e. rarely in the ground weave) – in supplementary weaves, tapestry, and appliqué patches and bands – and generally sparingly with tapestry representing the most extravagant use of camelid fibre.

Cotton yarns on the other hand are highly varied in terms of spin and fineness. This is noted by Rowe (1980: 86) with reference to the excavated textiles from the Las Avispas burial platform at Chan Chan, but applies equally to the material in the data-set of the current study. While it seems that camelid fibre was entirely state-distributed, locally-produced and processed cotton was much more likely to be

subject to both state and non-state control. All stages of cotton textile production were documented at the village of Cerro de la Virgen, 5km NW of Chan Chan, from resource procurement (cotton seeds and raw fibre) to the finished textile product (Keatinge 1975: 224-225). Most of the fields around this village were devoted to cotton production (S.Pozorski 1982: 193) and it seems plausible that this would be the source of at least some of the raw cotton at Chan Chan sent there to be spun by the *barrio* residents. If correct, this Chimú example could fit with Murra's (1989: 286) model for the Inka state, where the Inka could only control the product of *mit'a* labour if the state also supplied the raw materials.

The manufacture of luxury goods does not necessarily involve the use of exotic, restricted-access 'hardware' such as camelid fibre, metal ores or shell. Stein (1998: 22-23) discusses work on Harappan craft specialisation, which shows how locally-available low-value raw materials were fashioned into prestige goods of a high order such as ornaments of fired steatite or faience and stoneware by means of complex 'hypertrophic' technologies. This concept has parallels with certain types of Chimú cloth. Andean cloth in general was (and is still often) executed using relatively simple equipment – backstrap, horizontal, A-frame and vertical looms (Skinner 1974, cited in Lechtman 1993: 257) so that intellectual resources – i.e. knowledge and skill – are the main factors in determining which techniques can be practised. On the North Coast cloth produced using particularly complex techniques - such as double weave and DWW referred to above - seems to be overwhelmingly of locally-available cotton, and naturally-coloured (with perhaps some indigo) yarn (based upon a survey of published material and collections in Trujillo). This contrasts with examples from the South Coast, such as Nasca cloth

which uses camelid fibre which was in use much earlier on the South Coast. However, the sheer elaboration of the processes and presumably time involved to accumulate the necessary knowledge of the DWW technique would probably limit the number of individuals able to make such cloth and thus the number of people for whom they were made (c.f. Costin 2001: 292). These textiles, even though using the less-valued, naturally-coloured cotton rather than vibrantly-dyed camelid fibre would presumably be of high value in Chimú society. This is compounded by the fact that the DWW technique naturally produces large-scale, highly distinctive stepped imagery which is imitated in less-complex techniques as well as emblazoned across the walls of the *Ciudadelas* at Chan Chan (this is discussed in depth in Chapters Seven and Eight). This study thus suggests that two lines of prestige cloth circulated within Chimú society – the ‘state-issue’ coloured camelid fibre tapestry (and less-involved camelid fibre supplementary cloth) bearing standardised politically-charged iconography on the one hand, and the fiendishly complex cotton cloth with its technique-led, stylised imagery on the other. The study examines the extent to which these lines of goods remain intact under Inka *aegis*, and whether a similar system characterises other media.

Supervision of production may be exercised spatially in retainer workshops as documented at Chan Chan, but as Schortman and Urban (2004: 199) point out, it is not necessary for the entire production or distribution process to be vigilated – controlling strategic points in one sequence is sufficient. The Inka, by promoting the use of tin bronze exploited the fact that, unlike copper ore, tin oxide (cassiterite) is restricted in the Andes to a region of northern Bolivia (Lechtman 1991: 47). Monopolizing procurement of this resource was thus relatively straight-

forward, and promoting this type of bronze (as opposed to the arsenic variety previously dominant) by supplying the tin oxide directly to the artisans, enabled the state to siphon off the precious silver it replaced (Costin 1998a: 130).

3.2c Manufacturing in Tawantinsuyu

In less than a century the Inka rose to govern an empire which integrated more than ten million subjects in a realm stretching 5,500km from Quito, Ecuador to Santiago, Chile and Chimor presented the main obstacle in the campaign of the Cuzco overlords to achieve Inka control over the Peruvian coast. The brief period of Inka expansion did not allow for territorial consolidation and constant rebellions ensued. Rostworoski (1990: 455) suggests that the Chimú uprising prompted the Inka decision not to integrate coastal populations into their armies. The principle of relocating groups of people to provinces outside their homelands served in part to quell such risings. Those relocated, known as *mitimae*, were required to maintain their indigenous costume so as to remain apart and identifiably different from the local population. Rostworowski (1990: 456) discusses the Chimú *mitimae* noting that they included metal-workers, fishermen and water management specialists. Cases of people of Moche origin are documented down the coast such as fishermen from the Santa and Casma Valleys relocated to the Chancay Valley to supply the sovereign with fish and shellfish when he passed through the valley. The Chimú metalsmiths are the best known but Rostworowski (1990: 456) points out that there were also metalsmiths from Pachacamac, Chinchá, Ica and Huancavilca sent to Cuzco.

The Inka used a number of strategies to produce and obtain necessary goods – subsistence and craft. These strategies included two forms of rotational *mit'a* part-time corvée labour. In one specified goods were produced on command from people working within a household setting (cloth for the army is a known example but documentary evidence does not include reference to pottery or metal goods); in the second the setting was a state facility (Costin 1996: 215-216). There were two types of re-located workers – the *mitmaqkuna* kin-based groups of artisans who were able to provide the Inka with goods in regions lacking in the required skills, after being assigned to the newly-created artisan centres. Secondly are the *yanakuna*, who were full-time retainers (unlike the *mitmaqkuna* who were responsible for their own sustenance) and were isolated from their kin, which tied them to the state to a greater extent. The *yanakuna* were mostly agricultural workers but some were artisans (Costin 1996: 216). In terms of patrons, Costin (1996: 214) distinguishes between elite individuals and state institutions (such as the army); most of the *yanakuna* were attached to individual patrons but some worked for institutions including the state religion. The group subject to the tightest control however, were the *aqllakuna* – women taken as girls to weave elaborate cloth in strict seclusion, implied by the ‘barracks-like’ layout of the *aqllahuasi* at the site of Huanuco Pampa (Morris and Thompson 1985:70).

The *yanakuna* and *aqllakuna* were ‘attached’ specialists (Earle 1981, 1987) producing goods to satisfy the demands of their Inka patrons. Earle, Costin and Russell (1986) assess the degree of specialisation and different aspects of direct and indirect state influence over crafts in the Inka empire through analysing household and village level production in the Yanamarca Valley prior to and during Inka

domination. For the North Coast the existence of specialised producers is well documented during the late prehispanic period with more than twenty types listed by Ramirez-Horton (1982: 125), but to what extent can this division of labour be extrapolated back to the Late Intermediate Period? Topic's work at the Chimú capital (1982, 1990) characterised crafting there as being the work of full-time artisans, with those occupants of the platforms adjacent to the palace compounds considered as retainers. His studies also suggested that while workshops were specialised spaces, they did not necessarily specialise in a single product with evidence of multiple crafts being carried out in close proximity (1990: 156). In this current work I address the issues of specialisation and patronal involvement in Chimú crafting, assessing the extent to which Chimú objects of different materials and media reflect their production contexts. I also look at whether Topic's scenario of multi-crafting within single workspaces is evidenced in Chimú objects in shared technical or visual traits, and whether in pieces made using locally-available materials such as cotton and clay, as much as in those employing state-issue camelid fibre and metal which were more likely to have been made in supervised contexts such as workshops at the capital.

3.2d Chimú imagery: iconographic regulation

One aspect of this study is a comparison of 'strategic points' along the production sequences of objects in different media, particularly at the points when iconography is applied. The comparison adapts Bird's original 'structural, super structural and non-structural' textile classification (1963: 46) and extends it to

ceramic and metal objects allowing a cross-media comparison of the processes of image creation (see Chapter Four for in-depth treatment). In short, images created using different techniques involve varied labour inputs at different stages of the production sequence; accordingly the opportunities for image-regulation differs greatly with technique and with medium. To give examples: in mould-made ceramics and several forms of metal vessel the iconography is pre-set in a matrix – of wood, over which sheet metal is hammered, or clay from which the mould-halves are produced, in turn creating the vessel. Thus, ensuring stylistic consistency of iconography requires regulation only at the beginning of the production sequence as the mould or matrix is being formed. For textiles, contrasting examples are those of tapestry and embroidery. The first technique was used to create fine Chimú and Inka garments, and is a ‘structural’ technique in that the design is produced as the fabric is built up, rather than by adding extra elements on top of a ground cloth as in the latter. The labour value of tapestry cloth is thus added during this one-step construction with meaning encoded simultaneously so that, if imagery is to be vetted, the whole production process must be supervised. Non-structural techniques such as embroidery or painting endow the cloth with imagery towards the end of the sequence making this the ‘strategic point’ of concern.

Some form of regulation of imagery was probably practised on the prehispanic North Coast from at least the Moche period. One of the clearest instances is the scene of supervised weaving painted on a Moche IV vessel in the British Museum (e.g. Campana 1994, Shimada 2001). It shows eight, apparently female, weavers using backstrap looms under the surveillance of two larger-scale male figures

seated on low platforms. The cloth being executed would seem to be tapestry, as indicated by the numerous yarn-filled spindles (presumably of different colours) placed beside each weaver (Millaire 2008: 233). Weavers are each copying a (different) sample cloth hung up beside them. Shimada (2001: 186) reports an architectural structure at the Moche site of Pampa Grande featuring a low roofed platform similar to that shown in the scene, in which weaving tools, vessels and a drum were found, which was interpreted by Shimada as a supervised weaving workshop.

In the Chimú period the standardisation and distribution of the three main deities (Crescent Headdress figure, Chimú Goddess and the Moon Animal) across media could imply elite control over religious ideology and its depiction (Mackey 2002; Moore and Mackey 2008: 798). Assessment of this proposal is a central part of the current study, involving comparison of the cloth and ceramic material in the B.M. and Peruvian data-set with published metalwork and adobe friezes. Moore and Mackey (2008: 800) suggest that the Crescent Headdress figure is the only deity to be represented in all four media with the Goddess rendered only in three-dimensional ceramic form (Mackey 2002: 143). This study builds upon Mackey's work and compares the use of pre-set/incremental, applied and assembly techniques in various materials to create iconographic representations. In the case of cloth artefacts, relationships between material (i.e. cotton or camelid fibre), technique and iconographic category are apparent. The extent to which these relations persist among objects manufactured under Inka aegis should enable some comment on the degree of state involvement in the (re)- production of imagery.

The best documented instance of iconographic control during the Inka period is in respect of textile production. *Aqllakuna* were women selected by the state as girls mainly to weave elaborate textiles in state facilities, although some brewed *chicha* or were given as wives to the nobility. Morris and Thompson (1985: 70) note the strict seclusion of the women implied by the architecture of one such *aqllahuasi* at the site of Huanuco Pampa – access is very limited and the layout of regular rectangular structures is ‘barracks-like’. These women probably wove the *t’oqapu*-patterned tunics while sequestered so that they could be entrusted with the knowledge of how to create and combine *t’oqapu*, without the possibility that knowledge could be shared or tunics created ‘illegally’ for outsiders (Costin 1998b: 137). Costin (1998b; 128) notes that the drawings by Guaman Poma de Ayala show *t’oqapu* which do not match those on extant tunics, implying a strong division between the knowledge of the general populace and that of the elite and select artisans in respect of the production and meaning of the symbols. This knowledge would appear to have been lost in the first few generations after Spanish conquest. Supporting the significance of standardising, reproducing and combining these geometric symbols is a set of wooden plaques featuring painted *t’oqapu* found at the Chimú administrative site of Manchan in the Casma Valley (under Inka control after AD1470) reported by Mackey and Klymyshyn (1985: 276). These plaques are thought to have guided local weavers in the production of Inka-style tapestry tunics in various parts of the Inka empire.

3.2e Emulation and hybridisation – questions of copyright

Researchers have suggested that in some contexts efforts by commoners to copy prestige goods prompted further technological innovation to develop prestige goods that were more difficult to replicate (e.g. Hayden 1998: 33-34). However within the Inka state, the emulation of 'state-issue' goods by subject populations appears to have been actively encouraged, resulting in various 'hybrid' styles including that of Chimú-Inka. This promotion of 'hybridisation' seems to have been an integral part of the polity's statecraft. Costin (2008) suggests that the Provincial Inka and hybrid pottery reflects new dual identities for the local nobles – integrated into the Inka provincial administration system – in whose burials these ceramics occur. She further argues that the imperial administration itself was the prime agent in building and sanctioning these new identities, based on the evidence for local and Inka-style wares being produced in the same facilities which were often associated directly with the state administrative facilities (e.g. Donnan 1997, Hayashida 1999, 2003). This may have been an attempt to justify and legitimise the role of local leaders within the Inka imperial structure.

Prior to the Inka conquest hybrids do not appear to have had a role in the Chimú craft production system. Mackey's (2009: 345) identification of joint rule, and the use of both direct and indirect rule within Chimú statecraft could have provided a very similar context to Inka rule which spurred hybrid production as was the case for the Inka takeover of the Jequetepeque Valley (Mackey 2003). But archaeological evidence for the Chimú suggests otherwise. At two of the Chimú regional centres, Manchan and Túcume, shared rule is implied in architectural

canons and in the occurrence of both Chimú fineware vessels and those of the local styles – without any blending of the two (Mackey and Klymyshyn 1990; Heyerdahl *et al.* 1995). The maintenance of separate Chimú and local canons may not apply equally to textiles however – Mackey and Klymyshyn (1985: 276) identified a Chimú-Casma textile style which combined local techniques with Chimú decorative elements. With regard to architectural friezes, Narvaez (1995: 83) notes that a mural in the Temple of the Mythical Bird at Huaca Larga, Túcume takes the form of a chessboard of raised and sunken squares with small painted versions of the ‘Lambayeque diving bird’ motif. This would seem to blend Chimú (the raised chessboard which appears at Chan Chan) and Lambayeque (the use of paint and the motif) features. The state hold on iconographic reproduction was probably inconsistent across different media and in different parts of the empire, in accordance with motivations and strategies for takeovers as well as the roles of the various media within these.

In this research I will argue that Chimú craft production underwent significant re-organisation under Inka annexation, but the technical practices and visual traditions of the North coast artisans remain apparent in objects manufactured in this context of conquest.

3. 2f Imperial expansion and craft production on the late prehispanic North Coast

After the demise of Moche, Chan Chan became the capital of the exceedingly centralised Chimú state eventually becoming the largest urban centre in South America. Initial construction at Chan Chan began shortly after the abandonment of

Galindo, a Moche V site at the mouth of the Moche Valley c.A.D.850 (Topic and Moseley 1983: 158-9). During the period of initial Chimú consolidation of the Moche-Chicama-Virú heartland, up until c.A.D.1200, incorporation of these valleys seemed to be aimed at extracting labour with which to undertake massive irrigation projects, to develop agricultural production and also to build defensive works (Topic and Moseley 1983: 163). Keatinge (1974) identified several sites in the Moche Valley as what he termed 'rural administrative centres'. He suggested that these settlements "represented 'state presence' in non-metropolitan areas of the valley" (1974: 67) maintaining state control over such projects as the construction of the inter-valley La Cumbre canal, as is thought to have been the purpose for the establishment of Quebrada del Oso 29km north of Chan Chan in the Chicama Valley. Great quantities of standardised mould-made bowls were found at this site which Keatinge interprets as evidencing the state's responsibility for feeding large labour parties working as part of a *mit'a* system (1974: 79). Such labour tax obligations dated back to at least the Early Intermediate Period on the North coast, as Moseley (1975) showed in his analysis of Moche construction data from the Huacas del Sol and de la Luna. Continuity of this institution into the Late Intermediate Period is also evidenced in Chimú sites with wall segmentation, such as variations in size of adobe brick course patterning in the walls at Chan Chan (Moseley 1975: 193) as well as in the construction of the contemporary La Cumbre canal. Similar organisational principles are inferred for the construction of defensive adobe walls around the city of Trujillo in 1687 from a manuscript which identifies eight native communities as brick suppliers (Ganster 1973 cited in Moseley 1975: 192). Moseley considers that such sectioning was inherent in the

design and organisation of construction, rather than resulting from loose coordination of work groups – for example the marking of Chan Chan wall segments by poles implies planning (1975: 194). Segmentation will be a recurring theme in the present study, which will argue that such an organisational format permeates the production of different craft objects as well as the large-scale construction projects on the North Coast considered by Moseley.

Craft production in these early Chimú sites in the Moche Valley outside Chan Chan has not been identified with the exception of Cerro de la Virgen, 5km Northwest of the capital near Huanchaco Bay where textile production is strongly documented (Keatinge 1975: 224-5). Topic and Moseley (1983: 164) consider that the focus on intensive craft production at the capital is apparent only from c.A.D.1350 with the sudden appearance of metalworking, probably the result of importing artisans from conquered areas. Prior to that period expansion seemed to be motivated by a need to develop a strong agrarian base.

Following the initial phase of consolidation of control over the heartland, the Chimú undertook a three-phase expansion. Work over the past two decades has revised the chronology of movement into the successive valleys of the North and Central Coast suggested by previous studies (e.g. those of T.Topic 1990; Mackey and Klymyshyn 1990). The current theory is that the Jequetepeque Valley to the north of Chicama was brought under Chimú control around A.D.1320 (Mackey 2009; Moore and Mackey 2008), significantly later than the date range of A.D.1130-1200 suggested by T.Topic (1990). The Chimú took over the site of Farfán where a previously unknown Sicán occupation was recently identified (Mackey 2009: 330).

The Farfán Sicán-style buildings are similar to those at Pacatnamú, the primary Sicán centre in the Jequetepeque Valley, south of the heartland in the Leche Valley. The Chimú seemed to select Farfán over Pacatnamú for their regional centre; however the Sicán compounds were either razed to the ground or covered and built upon (Mackey and Jauregui 2004, cited in Mackey 2009: 330). No evidence was found for craft production during the Chimú occupation of Farfán (Moore and Mackey 2008: 791), although it was introduced to this site during the subsequent Inka occupation (see below). New sites were established by the Chimú at Algarrobal de Moro - probably dedicated to the administration of agriculture and irrigation (Moore and Mackey 2008: 792) - and at Talambo (Keatinge and Conrad 1983).

The second phase of expansion was southwards to the Casma Valley with the intrusive regional centre of Manchan constructed at c.A.D.1350 (Moore and Mackey 2008: 792). Here, an apparently different imperial strategy to that in Jequetepeque applied, with little disruption to local political, economic and settlement systems. Chimú constructions co-existed with architecturally Casma – style compounds suggesting a policy of joint rule (Mackey 2009: 334). The occupants of Manchan engaged in part-time artisanship – spinning, weaving, woodwork, copper-working and producing large quantities of chicha (Moore 1989: 685) – in addition to fishing and agriculture. Mackey and Klymyshyn (1990: 211) note that craft objects at the site are of lower quality than those at Chan Chan (e.g. wooden staffs) or were utilitarian (copper needles) suggesting that the level of training and specialisation was lower than at the capital. The copper used was of

lower quality and other metals or alloys are unevidenced while the full range would have been available at Chan Chan.

The third phase saw Chimú control established over the northern valleys from Jequetepeque to La Leche between A.D.1360 and 1400, taking over the seat of the Sicán polity at Túcume. It is from this period that the basic craft orientation at Chan Chan dates, with the city changing from “an administrator and consumer of wealth into a producer of wealth” (Topic and Moseley 1983: 164). At Túcume the Chimú completely remodeled the monumental Huaca Larga, including adding a workshop sector for artisans with corridors and roofed benches of similar layout to the weaving scene shown on the Moche vessel in the BM (Narvaez 1995: 87). In the Non-monumental Sector V was constructed a shell-bead workshop (radiocarbon-dated c.1434) documenting the whole reduction sequence from whole shells to finished beads (Sandweiss 1995: 145). Sandweiss also cites metalworking evidence in Sector V in the form of charcoal and slag-like material, drops of oxidized copper and crucible fragments (1995: 168).

The best-documented Chimú ceramic workshop is that at Pampa de Burros in the Lambayeque Valley (Tschauner *et al* 1994; Tschauner 2006) where the tools and several large ovens imply a great production output – certainly above that consumed by the single domestic unit/extended family living there. Specialisation is inferred from the well-defined workshop internally differentiated into areas for highly skilled/low skilled work (2006: 184), from the absence of production in other sites of the area, and from the significant investment represented by the moulds and paddles (1994: 377).

While there are several other published instances of Chimú ceramic production sites – including the small workshop making mould-made pottery at Quebrada Santa Cristina on the southern margin of the Casma Valley (Moore 1991: 34) and possible pottery manufacture in Sector V at Túcume (Sandweiss 1995: 168) – the evidence for pottery production increases greatly during the Inka period of the North coast.

The exact events surrounding the fall of Chimor to the Inka are not clear, partly owing to the fact that surviving versions are of *cuzqueño* origin and not coastal (e.g. Netherly 1988: 108-9 discusses conflicting reports within Cieza de Leon's account of voluntary submission versus fierce battle). However, it is apparent that around A.D.1462-1470 (Rowe 1948: 40, based on Cabello Valboa) the dismantling of Chimú reign took place, and was a process rather than a single event.

Rowe (1948: 44) writes of the wealth encountered by the Inka on the North Coast, stating that the plunder from the looting of Chimor was the richest ever brought to Cuzco. From it, he continues, Pachacuti created statues of Viracocha the creator, the Sun and Mama Ocllo (legendary ancestress), as well as a great band of gold to go around the walls of the Coricancha.

He discusses the influence of Chimor on Inka administrative structure suggesting that the system of governing through a hereditary local nobility was borrowed from the Chimú, much of Inka political organisation being formulated by Topa Inka following the conquest of the North Coast (1948: 46).

The relocation of populations was an Inka state policy, to aid in unifying the empire as well as to provide goods wherever they were required. This movement

and concentration of artisans appears most strongly associated with the reign of the emperor Huayna Capac (e.g. Espinoza 1987: 62 citing the silversmiths of Ishmay; D'Altroy *et al* 1998: 289 noting the 1000 tapestry weavers and feathered-cloth makers moved to Milliraya along with 100-300 potters). Given this consolidation stage of development of the Inka empire under Huayna Capac, it is possible that the coastal economies provided some influence for this model. Such relocation was apparently also practised in the Chimú period. Rostworowski (1985: 405) identifies coastal colonies in Cajamarca prior to the Inka period and Shimada (1985: 379-80) suggests dispersed Cajamarca colonies on the North Coast from Middle Horizon times, based on, among other factors, a non-local style of burial at San José de Moro.

The Chimú utilisation of a labour tax system as suggested by segmentation within the large-scale construction projects (Moseley 1975) may also have served as a model for the Inka *mit'a* policy (Keatinge 1974: 79; Moseley 1975).

Aspects of Chimú craft production persisted under Inka rule; Rowe (1948: 46) emphasises the high esteem with which the North Coast artisans were held by the Inka making the suggestion that Chimú abilities in tapestry weaving, feathered-cloth making and particular metalworking techniques influenced Inka craft production. Archaeological evidence suggests that Chimú production was intensified under Inka rule and there is a particular disparity between the number of published Chimú sites with evidence of pottery manufacture and those dating to the Inka period. In the Jequetepeque Valley at Farfán the Inkas made significant changes, increasing the number of resident administrators and turning the site into

a production centre. The rise in administrators is inferred from the conversion of some *depositos* (storage rooms) into residences (Mackey 2004: 84). The number and capacity of *depositos* is enormously increased suggesting that Farfán was used as a great storage centre, a theory supported by Cieza de Leon (1959 (1553): 322) who states that the Inkas accumulated tribute in the Jequetepeque Valley (referred to as 'Pacasmayo' in the chronicles) (cited in Mackey 2003: 336). The presence of a feature (a group of small squares incised in the plaster floor, each one with a central concavity) in Sector 2 which Mackey (2004: 85) identifies as a *yupana* (an accountancy instrument used in population censuses and goods inventories) also consolidates this suggestion. The Inka introduced both textile and ceramic manufacture to Farfán as reflected in the discovery of receptacles in state-constructed premises west of Complex 4 containing spinning and weaving implements and copper needles (Mackey 2003: 336), and in a workshop excavated north of Complex 2. The latter contained a firing area and ceramic waste considered to have been placed around vessels during firing; an elite residence nearby featured receptacles with implements including anvils (Mackey 2003: 338).

The smaller site of Algarrobal de Moro was also subject to heavy remodelling during the Inka occupation including the addition of new storage areas featuring floors paved with pebbles covered in a thin plaster layer. Similar pavements occur in Inka highland centres and Mackey (2004: 82) notes that this is one of the few instances where the Inka used a highland construction technique. At Farfán and Algarrobal the architectural style used is unique to the North coast, reflecting neither Inka nor traditional local canons; Mackey terms this 'arquitectura conciliadora' (2004: 78) in that it probably served to appease indigenous Chimú

populations. The Inka introduced ceramic production to Algarrobal, documented in the presence of kilns of various sizes, and assorted Chimú-Inka moulds (Mackey 2004: 82).

Chimú-Inka pottery production is further evidenced in the lower Jequetepeque Valley at the site of Canoncillo (Donnan 1997). Here, vessels produced are mainly of utility type (including the characteristic Inka form of the aryballoid jar which was used to serve *chicha* to state workers) but with little evidence for the production of the ornate vessels used by religious and administrative elites such as keros, pacchas and high-quality decorated and burnished blackware (1997: 52). Paste is highly variable suggesting that clay was not bulk-prepared but made in small quantities by individuals or families. Variations within vessel types suggest that many different potters were operating here probably not under direct state control.

Craft production seemed to be further expanded by the Inka to the North in the Leche Valley. Such production served to fulfil artisanal labour tax obligations to the Inka state and applied equally to utilitarian vessels such as those produced at Canoncillo, as to fine textiles and metal objects. At Batán Grande in the Leche Valley the work of Shimada *et al.* (1982) suggests that metal-processing (prill-extraction copper smelting) became undertaken on an industrial scale under the Inka. Archaeological evidence for pottery production suggests that specialists were permanently relocated to state facilities, such as the administrative centres of La Viña and Tambo Real in the Leche Valley (Hayashida 1999) rather than to separate production enclaves (as for the 1000 weavers moved to Milliraya noted above). Hayashida's (1999) study focuses on the extent to which production in the Leche

Valley followed North coastal versus Inka conventions, concluding that Inka retraining of local potters was minimal. A specific vessel form, the ayballus, represents the most evidence of Inka directive in production - both the form and firing method used with this jar are previously unknown on the North Coast (1999: 346-347). Hayashida suggests several possibilities to account for persistence of local styles during state governance. One is that such low-value, low-visibility, utilitarian pottery was not worth the bother of retraining artisans, while the political significance of the aryballus reinvested state efforts in this regard (1999: 347). If this is the case then similar patterns should emerge from an analysis of the hybridisation of cloth. This study assesses the extent to which 'Inkanisation' varies across cloth types, testing the theory that high-value camelid fibre tapestries bearing politically and symbolically-charged imagery will show the most Inka input in terms of production methods. Such textiles would most likely be manufactured in facilities closely tied to state administration – at Huaca Larga, Túcume for example. Here Narvaez (1995: 93) identified 19 weaving women, buried with assorted tools in the Stone Structure which formed the core of the Inka regional administration centre, as *acllas*.

An alternative reason for the continuity of local styles is that because the Inka governed through indirect rule via local elites, locally-accepted symbols of status and identity were necessary to ensure cooperation of subject populations (1999: 347). This is a theory discussed by Costin (unpub. 2008) who suggests that the pottery she refers to as 'Provincial Inka' and 'hybrid' reflected new dual identities for the local nobles- integrated into the Inka provincial administration system – in whose burials these ceramics occur. She further argues that the imperial

administration itself was the prime agent in building and sanctioning these new identities, based upon the evidence for local and Inka-style wares being produced in the same facilities which often, as in the cases mentioned above at Canoncillo and in the Leche Valley (Donnan 1997 and Hayashida 1999, 2003), were directly associated with the state administrative facilities.

3. 2g Current research in Chimú archaeology

This study contributes to two areas of debate in the archaeological literature on the North Coast – (i) the organisation of Chimú craft production, and (ii) the extent of Inka presence on the North Coast.

The organisation of Chimú craft production has recently been questioned. Previously it, and the Chimú economy in general, had been characterised as highly concentrated (e.g. Mackey and Klymyshyn 1990, Topic 1990, 2003). Arguments for centralised craft production were based on Chan Chan with its great *barrios* of lower class artisans, retainer workshops and elite-associated crafts, and the apparent lack of evidence for craft production at peripheral sites.

Topic (2006: 239) has suggested that the artisans at Chan Chan – both the c.3,000 occupants of the retainer platforms adjacent to the *ciudadelas* and the 12,000 artisans of the *barrio* areas - had a status comparable with that of the Inka *yanakuna*. The latter were one of two types of re-located workers. *Mitmaqkuna* were kin-based groups of artisans who were able to provide the Inka with goods in regions lacking in the required skills. The *yanakuna* on the other hand, were full-

time retainers (unlike the *mitmaqkuna* who were responsible for their own sustenance) and being isolated from their kin were tied to the state to a greater extent. Most were agricultural workers but some were artisans (Costin 1996: 216). It is likely that such communities existed in the Late Chimú period. A sharp increase in craft production at the capital is evident from about AD1350 in the activities of the lower class *barrio* residents and in the sudden appearance of metalworking (Topic and Moseley 1983: 164; Topic 1990: 149-150). These authors have suggested that this resulted from a mass importation of artisans from the conquered Lambayeque region, although Topic (2009: 240) notes that this hypothesis needs further confirmation.

Tschauner (2006: 172) points out that this model of the Chimú palace economy has inappropriately been assumed to represent the entire Chimú economy, and where craft production is considered to be synonymous with the fabrication of wealth goods for circulation within the political economy. This model however is at odds with the sheer amount of utilitarian and fine ceramics (production of which is entirely un-evidenced at Chan Chan – Topic 1982: 165) and, I will argue, with the cotton cloth executed in specific, complex technologies which counterbalance the elaborate, colourful camelid fibre tapestries for which the Chimú are known. The Chan Chan-centric perspective may account for much of the production of specific wealth items such as metalwork and fine camelid fibre and feathered cloth, but regular consumer goods of cotton and clay are not concurrent with this. The fabrication of objects in different materials (access to which involves varying levels of state intervention) differentiates the roles for which these objects were intended within Chimú society. The organisation of Chimú craft production as a whole thus

must be investigated, and the extent and means by which control was exerted across different crafts and techniques needs to be assessed.

Tschauner's work at Pampa de Burros (2006) shows that here in the Lambayeque Valley – a northern province of Chimor – a group of specialised potters manufactured and exchanged their goods independently of the Chimú rulers. Similarly, the existence of independent producers of regular consumer and luxury goods is well-documented for the late prehispanic period of the North Coast. Espinoza (1987:54) for example notes 22 types of artisans organised in guild-like groups of a single trade, based on documentation of 1566-1567, and it appears that (in Lambayeque during the period of 1560-1570 at least) cloth production was further specialised with practitioners of fine and coarser weaving, pigment-makers and mantle-painters (Espinoza 1987: 57). A recent study by Ramirez however (2007) concludes that there were many fewer dedicated craft specialists on the late prehispanic North Coast than previously thought. Ramirez argues that only a small number of specialists were attached to the service of a lord, but that the bulk of production was undertaken by the farming and fishing folk who made up most of a local lord's labour force. Such people lived in relative self-sufficient isolation, multi-tasking in making their own cloth and shoes as well as engaging in construction and agricultural work for their own use but also supporting the small number of 'elite' artisans engaged in luxury goods manufacture (Ramirez 2007: 275). While Topic (2003; 269) argues that the Chimú *concentrated* artisans at Chan Chan (in drawing contrast with the Inka policy of transplanting colonies of conquered peoples resulting in artisans being *dispersed* across the empire), Ramirez' scenario of non-centralised commoner craft production with a small number of wealth-goods-

producers, would seem to be a more productive approach for understanding the organisation of Chimú craft production as a whole.

In lacking excavated material from Chan Chan the present study is unable to contribute to the question of the nature of artisanship at the capital - whether crafters worked full-time and were supported by the state, and whether they operated in kin-based groups or not. However by comparing cloth and ceramics made in the Late Chimú and Chimú-Inka periods with earlier material, in terms of standardisation of materials, techniques and aesthetics, it will be possible to consider the contexts in which these objects were produced. Rowe (1948: 47) had tentatively suggested that the office of *yanakuna* may have been initiated by the Chimú noting that the word *yana* existed in the Muchic language of the North Coast, signifying domestic servant. The number of distinct categories of workers – and of cloth producers in particular – may have proliferated during the Inka period (e.g. Costin 1998b). These job distinctions are evidenced on the North Coast of Peru in Colonial population censuses such as those of 1560-1570 for the Lambayeque area (Espinoza 1987: 57). The present study addresses the extent to which such specialisation in craft production was developed with the contact between the Inka and the institutions of the North Coast. As Topic (2009: 240) comments, the Inka use of *yanakuna* was certainly more extensive than that of the Chimú but it seems likely that the expansion of this class was a major politico-economic process set in motion in the later prehispanic period. An analysis of the changing qualities of cloth and ceramics can detail its impact upon craft production.

(ii) These arguments for the intensification of craft production under Inka rule relates to the second theme under discussion in the archaeological literature is the extent of Inka presence on the North Coast. In recent years Inka influence has been shown to be much greater than previously thought (Mackey 2004, 2009). The Chimú economy was incorporated into that of the Inka, with the diversion of some coastal resources to the sierra (Netherly 1988: 116). This included references to the forceful resettling of Chimú metalsmiths to Cuzco to produce goods directly for the Inka state (Rowe 1948: 46, based on Cieza 1943, Cap.58: 269). Labour management was highly orchestrated in the Inka state - referred to by Lechtman (1993: 248) as 'social engineering' – and the relocation of populations wherever goods were required was a state policy. Espinoza Soriano (1987: 59) distinguishes two types of artisans – independent artisans operating (often itinerantly) on the North-central Coast, and the artisans recruited from amongst them to work in state plants. Murra (1956) highlights that this use of 'specialists' is part of a shift in the organisation of Inka production, 'from corvee to retainership', his argument being that the decentralised nature of the original corvee labour system made it difficult to control, and unable to meet rising state demands.

Chimú craft production was significantly re-organised by the Inka and in some cases intensified. For example the Inka modified Huaca Larga at Túcume, installing what Narvaez (1995: 93) considers to be *aqllakuna*, where in the Huaca 1 part of the site there had previously been a Chimú artisan centre with weaving and metalworking evidence. At Farfán, a Chimú administrative centre co-opted by the Inka, there is no evidence of craft production at all in Chimú times but the Inka introduced both ceramic and textile production (Mackey 2003: 336-338). Similarly,

ceramic production was initiated at Algarrobal de Moro by the Inka (Mackey 2004: 82).

This intensification is suggested also by the fact that Chimú-Inka ceramics are much more prevalent in museum collections than those of earlier phases (Rowe 1984: 124). The persistence of North Coast canons in Chimú ceramic production under the Inka (as Hayashida's (1999 and 2003) work at La Viña and Tambo Real has shown) and the distribution of Chimú-style ceramics and textiles far down the south coast, as well as in Machu Picchu and Cuzco beyond the reaches of the Chimú state, suggest great respect for Chimú artisanship on the part of the Inka (Rowe 1984: 124). In Gell's (1998) terms one might speak of an extension of Chimú agency via the vehicle of Inka consumption. It is the intention of this study to assess the evidence for 'Inkanisation' of Chimú crafts, comparing the archaeological evidence for production re-organisation with patterns manifest in the data-set to study how techniques, processes of image creation and labour inputs vary in cloth and ceramics manufactured under Inka *aegis*.

3.3 The data-set

3.3a The British Museum collections

The Chimú material in the British Museum amounts to some 700 ceramics, 100 textiles and 20 items of metal and wood. Some Chimú vessels obtained by the Museum in 1825 are amongst the first of the Museum's Peruvian acquisitions. Significant collections were added in 1858 (Moche and Chimú vessels collected by

Charles Farris in Peru), in 1896 (the Giglioli collection of textiles) and in 1907 (textiles and ceramics collected by Dr de Bolivar in Northern Peru). In 1921 the Museum received a large collection of some 600 vessels from a J.H. Spottiswoode who apparently bought the collection as a whole while visiting the North Coast of Peru. The Museum kept 272 of these, dividing the rest amongst other institutions including the Pitt Rivers Museum in Oxford and the City of Bristol Museum and Art Gallery (Mowat 1988: 1).

Here I briefly outline the registration numbering system used by the Museum. The illustrations of material used in this study are all of British Museum pieces unless otherwise stated in the caption.

In 1861 the Museum introduced a system of recording year, month, day and object number for acquisitions; this method persisted until the end of 1938. As an example, item number 1907,3-19.24 was acquired on the 19th March 1907. Henry Christy (1810-1865) made extensive collections of ethnographic material from the mid 1850's onwards, transferred to the Museum in November 1865. A system of cataloguing slips was introduced to classify the Christy Collection using four-figure numbers (e.g. 9007) and a line drawing. Between 1865 and the 1880s plus number objects were added to the original Christy four-figure series (e.g. +5388). In 1861 Carl Ludvig Steinhauer was asked to catalogue the Christy Collection; numbers preceded by 'St.' refer to these objects (e.g. St.333q).

Those which became separated from their original registration documentation in the past were allocated Query numbers (Q numbers), as for example in 2006,Q16.

3.3b Collections studied in Peru - textiles

Several sets of textile material with more reliable provenance were identified during preliminary fieldwork in Peru in the autumn of 2008 and examined the following year in the winter of 2009 during the main research trip. The inclusion of this material was intended to help contextualise the B.M.'s collection, and these were selected for three broad reasons: to provide material of secure date, to provide material from secure provenance, and to complement the range of production techniques and styles within the B.M.'s collection.

The first set was excavated in 2004 when the Instituto Nacional de la Cultura (INC) undertook cleaning and conservation work at the early Chimú site of Huaca Tacaynamo in the district of Esperanza, Trujillo, in the Moche Valley. This is a small truncated pyramid, one of several such structures (including Huaca El Dragon) on the fringes of the capital Chan Chan. A square, stepped platform built of adobe bricks, it would have featured exterior panels decorated with painted low relief friezes (see Piminchumo 2004: fig.3), now unpreserved. A series of excavations were conducted there between 1948 and 1987 by Richard Schaedel (1951), Francisco Iriarte, Hugo Navarro and Edgardo Silva (cited in Jackson 2004: 299) which yielded 25 wooden figures and 2 wooden litters in total. These have been studied by Margaret Jackson (2004). Jackson (2004: 302-3) suggests that the site belongs to the Early Chimú period (tenth century) based upon the ceramic assemblage (citing Navarro 1990, unpub. thesis) and the 'flat' adobe brick form corresponding to Kolata's (1982) adobe seriation from Chan Chan.

During 2004 a number of textiles were recovered from a layer of rubble in the East corridor of the pyramid. This cloth is mainly unpatterned but is very significant in that it allows comparison of the technical features of yarns, weave structures and colours with the pieces in London. 60 of these were examined and recorded to provide better-dated and contextualized material which complements the data-set of the B.M. collections which predictably consist of decorative, aesthetically-pleasing textiles.

Two sets of textile material proceeding from the El Brujo complex in the Chicama Valley, district of Magdalena de Cao are included in the data-set. El Brujo is a highly significant complex owing to its provision of a complete sequence of occupation from the Preceramic (2500BC-1800BC) to the Colonial period. It is located on a large terrace just to the north of the Chicama River and consists of three main mounds – the earliest is that of the Preceramic Huaca Prieta, while Huacas Cortada and Cao Viejo were built in the Early Intermediate Period and are attributed to the Moche culture. The complex includes other smaller Lambayeque and Chimú platforms and mounds constructed between A.D.800 and 1470, and a Colonial church built by the Spanish.

The first set of material consists of four pieces excavated in 1992 from the SE sector of Huaca Cao Viejo and is held on-site in the Museo de Cao. The second group of textiles lack a definite archaeological context but are said to come from 'Huaca Partida' which is another name for Huaca Cortada. Ten pieces were examined and recorded, part of a group of 178 specimens coming from the Huaca and donated to the Museo de Arqueología de la Universidad de Trujillo by a Sr.

E.Jacob in 1947 (Rivera 1995: 213). Rivera (1995) studied this second collection, looking particularly at iconography. This group of textiles is highly technically consistent and represents a distinctive technique (a warp-predominant alternating float weave). It is not one of the more usual techniques associated with Chimú cloth, but Rowe publishes two similar examples (1977: 58-59 and 1984: 82-87) which she attributes to the Toothed Crescent style, either contemporary with or slightly earlier than the Late Horizon Plain Crescent style. The El Brujo collection though suggests that this technique and its variants constituted a distinct technological style – perhaps localised in the Chicama Valley – based around manipulation of the warp rather than the more usual Chimú use of the weft as the pattern-bearing element.

The textile collections of the Museo Amano in Lima were examined and 15 selected for inclusion in the data-set; specific site names were available for 5 of these (if no definite archaeological context) – 4 from Gramadal in the Casma Valley and 1 from Lechucera. The others were part of a donation in 1970 from a collector in Trujillo, a Sr. Segundo Rojas Bartra, who had obtained them locally.

The data-set includes also 9 textile pieces from the Museo de Arte in Lima, including a set of accessories featuring *Spondylus* shell appliqué work. None of these were associated with any information regarding provenance, but are important examples of Chimú appliqué work (in terms of their technical accomplishment and preservation). These pieces allow comparisons to be made with the rest of the data-set (textiles, ceramics and other media) with regard to how imagery is created using different techniques and materials.

3.3c Collections studied in Peru: ceramics

The main ceramic collection examined in Peru was that of Museo Larco in Lima. As was found to be the case with most museum pieces (in Peru and Britain), information regarding archaeological context was rarely available. However 22 pieces out of those studied had a specific site associated with them – among them Sausal and Facala, Department of La Libertad, Pacatnamú in the Jequetepeque Valley, Resbaladera and Casa Grande in the Chicama Valley and two vessels are from the Chao Valley to the south (Santa Rosa). Included in the data-set were 5 (unprovenanced) mould-matrixes.

The Museo Nacional de Antropología, Arqueología e Historia in Lima provided access to a small number of vessels which did have strong provenance information. 3 were excavated by William Strong in the Virú Valley, one by Donald Collier at site V-302 in the Virú Valley, one by Gordon Willey in the Virú Valley and 3 by Max Uhle on the Isla de San Lorenzo. Collier's (1955) work includes useful technical descriptions and photographs of excavated Chimú (his Tomoval and La Plata Virú phases) material.

To balance the lack of strongly contextualised ceramics in the sample, use is made of published specimens. Donnan and Mackey's (1978) study of Chimú ceramics from the Moche Valley is valuable in its seriation of (photographed) vessels from securely-provenanced burials. Early, Middle and Late Chimú vessels come from the Moche pyramids; Late Chimú examples come from Chan Chan (from a court area to the north of Las Avispas burial platform (1978: 341-343) and Chimú-Inka material was also excavated at Chan Chan from the rear section of Ciudadela Rivero and the

first section of Velarde (1978: 361-373). Chimú-Inka burials can also occur in sites constructed in earlier periods which appear to retain a ritual significance in the Chimú period, such as those found in the platform mound called Huaca Curaca at Cabello Muerto (1978: 365).

It was not possible to examine the Chimú-Inka material excavated from the site of Farfán as this material was still being sorted and studied but Mackey (2003, 2004) has published some of the vessels found. Most of the vessels associated with the elite residences are hybrid Chimú-Inka, but some are Provincial Inka imitating Cuzco polychrome (2003: 336-3337). A cemetery within Complex VI yielded 4 Chimú-Inka vessels (2003: 342-344). Outside the complexes at the foot of Cerro Faclo, the funerary platform which denominated 'La Huaca' was the site of various burials including one multiple burial with 33 vessels (2003: 346-347). The descriptions, photographs and illustrations of these form a useful comparative data-set to compare with the BM and other Chimú-Inka pieces.

CHAPTER FOUR: DEVELOPMENT OF METHODOLOGY

4.1 Attribution

4.1a Ceramics

Several sources were used to classify the material in the data-set as Chimú or Chimú-Inka. Scheele and Patterson's (1966) work provided a preliminary seriation of North Coast vessels based on their study of a collection in the Peabody Museum of Archaeology and Ethnology. Their 'Chimú Phase T-1' and 'Chimú Phase T-2' (1966: 23-26) which are the fifth and sixth respectively of seven phases are the most relevant. They do note that most of the pieces used to define T-1 lack specific site information but that they were said (presumably acquisition notes) to come from around Trujillo in the Moche Valley, or Chimbote at the mouth of the Santa Valley (1966: 23). Double chambered bottles and stirrup spout bottles are the most common forms of phase T-1 and Scheele and Patterson (1966: 23-24) note some useful traits diagnostic of this phase which immediately precedes Inka influence on North Coast pottery. These traits include mould-marks down the sides of double-chambered bottles, hemispherical design panel with impressed figures on a stippled background, and smoked blackware. Stirrup spout bottles feature a modelled lug at the base of straight spouts; a band of impressed patterning with small birds is often present on stirrup sides and stirrup cross-sections are square or rectangular. These features contrast with those characterising the stirrup spout bottles of Scheele and Patterson's earlier third phase,

the Trujillo T-2 Phase, where spouts are tapered, stirrups rounded and modelled lugs lacking (1966: 21).

Scheele and Patterson go on to outline the traits characterising Chimú vessels of the Late Horizon which bear a number of Inka-derived features. The chambers of double-chambered bottles with a human head on one chamber become more spherical or globular than earlier examples, and they were made with single two-piece vertical moulds that joined at the chamber centre rather than using two separate two-piece moulds joining at chamber sides (Scheele and Patterson 1966: 25). Design panels on these double-chambered bottles generally feature chevrons made of serrated lines and panels are split in two by a band which surrounds the mould joint. Spout rims are sometimes flattened in the manner of some Inka vessels and a bird head in some cases replaces the human head of earlier phases on the front chamber (Scheele and Patterson 1966: 25).

Stirrup spout bottles of this Late Horizon phase are characterised by innovative traits such as the presence of a pierced lug at the spout base, flattened rims and a circumferential band of patterning on the upper section of the chamber rather than hemispherical panels. Scheele and Patterson note that redware and smoked blackware versions of these bottles are equally common in their sample (1966: 25).

These authors describe several innovative vessel forms of this period on the North Coast including a small double-chambered bottle with tall spouts, one of which is surmounted by a small figure and connected by a flat bridge (1966: 26). The patterning

on these vessels is impressed and occurs in narrow circumferential bands around chamber bodies.

The aryballoid jar in blackware and redware is another new form appearing on the Late Horizon North Coast and was among the forms studied by Costin in her 2008 (unpublished) work on Chimú-Inka 'hybrid' vessels identified during a larger investigation of Inka ceramic variation in museum collections.

The traits outlined above were applied to the vessels in the data-set in order to classify them as Early/Middle Chimú, Late Chimú and Chimú-Inka. A few vessels were problematic to classify owing to the presence of several features, each associated with a different period. In particular stirrup spout bottles might feature for example a rounded-profile stirrup and a pierced lug (e.g. 1926,3-6.8) where the former trait implies an Early/Middle Chimú date but the presence of pierced lug associates it with the Late Horizon. In this case the vessel was assigned to the Early/Middle phase because the sample included several other very similar vessels which could be said to be more clearly of this era owing to the stirrup shape and the fact that these bottles were not made in an all-inclusive single two-piece mould-set but rather involved separately-made stirrup (discussed in Chapter Six).

Another example of a vessel which was difficult to classify was 1954, 05-666. Generally there were no instances of red/orangeware vessels with Late Chimú traits – only Early/Middle or Chimú-Inka which accords with Scheele and Patterson's (1966)

findings. However this orange vessel - a stirrup spout bottle - featured a square-profiled stirrup with straight spout and so was attributed to the Late Chimú phase.

4.1b Textiles

The number of textiles in the British Museum collections assignable to the North Coast reduced steadily throughout the process of cataloguing, owing to the fact that technical analysis of yarns and weave did not always support a Chimú attribution for cloth bearing imagery (for example figures, bird and human, in crescent headdresses) which is associated with the Chimú. There was particular difficulty in distinguishing Central Coast from North Coast cloth which can appear very similar. Lila O'Neale's early work on the Chimú cloth with secure provenance excavated by Max Uhle at Chan Chan and Cerro Blanco highlighted a number of technical features including paired warp plain weave, monochrome weft-faced cotton stripes, the use of a supplementary technique where the supplementary wefts appears almost wholly on the front face of the fabric, and the use of applied fringes (O'Neale and Kroeber 1930: 48). Ann Rowe (1980, 1984) built upon this early analysis in her important characterisation of the Chimú textile tradition.

Cultural attributions were made using the traits outlined by Rowe with regard to yarns, weave structures and iconography (1980, 1984). One fundamental problem I had in classifying the fabric in my sample was the fact that many are missing selvages and as King pointed out (1978: 90), 'warp can never be positively distinguished from

weft without selvages.'. In such cases I resorted to Rowe's writings on North Coast yarns. Her discussion of the yarns used in the textiles from Las Avispas burial platform at Chan Chan (1980: 86-87) showed that although cotton yarns in warp-dominant cloth are significantly varied in terms of spin direction and fineness, in the cotton plain weave fabrics she analyses, yarns are usually S-spun (with a few either wholly Z-spun exceptions or a few Z-spun warps, 1980: 87). She notes that tapestry cotton yarns are more consistent with warps being S-spun and Z-plied with wefts spun and plied in the opposite manner. Alpaca yarns on the other hand, are found to be highly consistent in being Z-spun and 2-plied S (1980: 86). With respect to the current sample, for tapestry fragments I consistently found that one element was Z-plied cotton while the other was S-plied camelid fibre and therefore worked on the assumption that the former was the warp and the latter the weft. For supplementary weave fabrics the cotton ground would feature one paired element which was always the opposite one to the supplementary pattern-bearing one. In these cases I took the paired element to be the warp.

These traits were of use in attributing the plain weave fabrics analysed (with those in the data set usually featuring shell applications or paint) to the Chimú culture. 1954, 05.602 for example is a cotton tunic with sewn-on *Spondylus* shell fish motifs; the weave structure is plain weave with paired warp (both warp selvages are present). Yarns are single S-spun and the yarn attaching the fish is Z-plied (also cotton). The set of material analysed from Museo de Arte (I.V.2.1-0038, I.V.2.1-0068, I.V.2.1-0078,

I.V.2.1-0081) featured similar technical traits – cotton plain weave with one element paired, single S-spun yarns and *Spondylus* applications.

The paired warp structure is the most common type of plain-woven cloth analysed by Rowe (1980) in her Las Avispas sample, but she also notes that plain weave cotton cloth with single warp and weft make up a significant portion (26 examples in relation to 41 paired warp – 1980: 88). Piece 1919,11-19.16 in the BM, a large all-cotton panel with a Plain Crescent Headdress figure done in supplementary weft weave features a ground of single warp and weft. I classed it as North Coast (Chimú-Inka) owing to the use of single S-spun yarns for the ground (Rowe notes that Central Coast balanced plain weave textiles use Z-spun, 2-ply S yarns, 1980: 86) and Z-ply warp for the separately-made fringe.

There are two examples of plain weave fragments with both elements paired and which lack selvages (1954,05.497 and 1954,05.499). These are both of white cotton and feature figurative designs applied in brown pigment; in both cases the yarns used are single S-spun and so I included them in my sample.

Textiles with supplementary weft patterning feature strongly in the data-set. Rowe (1980: 90-91) describes three types of such patterning in her Las Avispas material. The first of these, with its use of long supplementary weft floats on the front passing under only one warp or warp pair between floats, is comparable to a few examples in the current data-set where it is used to cover background areas surrounding iconography. In 1948,6.5 which features a row of figures in Plain Crescent Headdresses the tan

supplementary camelid fibre wefts covering the space between the figures floats almost entirely on the front face of the fabric. Rowe described a similar supplementary structure in her 1984 work where the supplementary wefts float across the front with the points at which they pass under a single warp/pair forming the design outline (1984: 57). She called this 'reserve-line supplementary weft patterning' and there are several examples in the current data-set from Museo Amano (R-1852 – see Fig. 5.13, Chapter 5 -, R-0695, R-2916a and R-2916b). A further example (1907, 5-15.21) was dismissed early on in cataloguing the British Museum material as the single-warp cotton ground weave with S-ply warp and weft suggests a Central Coast origin.

Tapestry-woven pieces are well-represented in the current data-set, with Rowe's (1980: 98) comparison between North and Central coastal practices used to justify their inclusion. She notes several differences in the technical features of tapestry pieces from the two regions including the direction of spin in the warp – spun S and plied Z in the North but in the opposite manner in material from the Central Coast. Two other features which she notes are the common loose wefts left on the back face of North Coast textiles in comparison to the more frequently neatly-finished faces on Central Coast material, and the use of sewing to close long slits in North Coast textiles where dovetailing tends to be used on Central Coast pieces (1984: 98). Again, several pieces emerging in the initial cataloguing of the B.M. collections which had appeared iconographically as possibly Chimú were later dismissed as of Central Coastal origin upon closer analysis. 1907, 3-19.25 for example is a large tapestry panel featuring repeats of a long-tailed figure akin to the Moon Animal but lacking a headdress; the

warp was found to be plied S and although long slits were sewn closed rather than dovetailed, the back face was very well-finished such that both faces were equally presentable. S-plied warp ruled out several other pieces which initially appeared as though they may be from the North Coast, including a scene of a figure in Crescent Headdress surrounded by birds and fish (1954, 05.480).

With regard to sampling I ended up with 93 textiles in my data-set, which were those from the collections I looked at which I could be most certain were Chimú and Chimú-Inka. Where I selected equal numbers of particular types of imagery for comparison - Plain and Toothed Crescent Headdress for example - I simply took them at random from the database.

4.2 Analytical methods

4.2a Ceramics

Previous studies have tended to characterise Chimú ceramics as mass-produced involving mechanised technical production, rapid turnover and heavy uniformity (e.g. Cordy-Collins 1996: 224). Such views consider that ceramics in the Chimú period lost the status that they occupied in the earlier Moche system of prestige goods, becoming commonplace and in contrast to costlier items such as textiles and metal objects. There is however, significant variation among Chimú ceramics in terms of the level of detail rendered, whether this is obtained via the mould or through post-mould re-working

(see next section), presence or not of stippling and the extent of polishing. These factors suggest that the extent to which standardisation and increased production of vessel forms and imagery could, or could not, be maintained by means of using moulds varied and that individual artisans were able to balance their own productive input with that pre-established by means of the mould. The study questions a view of Chimú pottery in general as a ubiquitous and easily-produced vehicle of such 'trademark' features as black, stippled surfaces. Rather, it develops a methodology to identify where in the ceramic production sequence creative inputs are most evident and how they compare in pre-, mould-based and post-mould stages. For example where the intentions of the agents involved in production (matrix-maker, *moldero*, mould-user etc) are indexed (to use Gell's 1998 term) by visually discernible traits such as mould-made or modelled features, polish and paint.

The following section outlines the fabrication process for vessels made using two-part vertical moulds to provide some context for a description of the recording methods used, before introducing the main analytical 'tool' developed in the study – an adaptation of Feinman *et al's* (1981) Production Step Measure.

4.2b North coast ceramic traditions – Moche and Chimú production sequences

Two-part vertical moulds were the preferred means of forming Chimú vessels which were then reduced-fired giving the characteristic black ware surface. The use of two-part vertical moulds builds on the earlier Moche tradition in which vessel chambers

were also formed using these devices but the manner in which the Chimú used moulds has some important implications relating to standardisation and the way in which agency – and the agency of whom – is exerted.

While Moche vessels used two-part vertical moulds to form the chambers, elements such as stirrups, spouts, handles and bases were shaped by hand before being applied to the body (Donnan 1965, 2005). Chambers were sometimes sculptural – volumetric representations of human heads in Moche III and IV, or mountain scenes for example – but for other vessels the form of the chamber was plain with the complex iconography applied in paint over a highly polished surface and then fired in an oxidising environment. The fabrication and decoration of Moche vessels is thus divided into discrete steps, each of which involves alternative choices as to the shape of the chamber and additional components, the form of the iconography to be added, the colour of the pigments used. The amount of work invested at each step is also clearly variable – the extent of burnishing for example, which Donnan (1965: 126) finds to be proportional to the elaboration of the decoration and the care with which the other techniques used in the fabrication of the vessel are employed. The use of pigments involves further creative decisions, in slip quality and cover, line regularity and thickness. Paint was applied freehand, with no use of stencils (Donnan 1965: 125), and often in a sufficiently distinctive manner that the work of individual Moche artists has been identified (Donnan and McClelland 1999).

The production sequence developed by the Chimú can be considered in some respects to be a streamlined version of the Moche system. There is a strong trend towards the incorporation of the entire vessel in the mould – stirrups, handles and spouts – along with its imagery. While the Moche combined moulds with pigment to form and enhance iconography, Chimú images in clay are primarily rendered in the mould (later sections discuss the occasional use of post-mould decorative techniques such as paint, incisions and appliqués). The form and patterning of the vessel are thus obtained in a single step by means of forcing a sheet of clay into a mould. This relatively unskilled act results in a fully formed and decorated vessel of two joined halves but the pre- and post-mould stages of the production sequence can manifest different levels of creative agency – potentially of other individuals in whose hands lies responsibility for the appearance of the vessel. To clarify this point, an outline of the fabrication process for vessels made using a two-part vertical mould follows.

4.2c Agency in the ceramic production process

The operation sequence begins with the construction of a mould-template or matrix from which the mould halves can be formed. This matrix might be an actual object such as an ear of corn, an existing vessel, or it may be modelled in clay (Donnan 1965: 118). The matrix determines the form of the vessel, and so it is clear that the primary iconographic-emplacing step is segregated temporally and/or spatially from the actual production of the vessel, and that since the iconographic elements are all present in

the mould there is no onus on the mould user to add anything. The act of production would seem to be repeatable, constantly reproducing the original, under the control of whomever had charge of the matrixes and/or moulds (cf. Cummins 1998: 208-210).

Arnold's (1999) study of vertical half-moulding technology among the present-day potters of Ticul, Yucatan has shown that this stage of matrix fabrication is highly labour intensive and requires great skill if using the modelling technique (1999: 63-64). Less effort and dexterity are necessary where the mould-template is created directly from a vessel to be copied. A similar portrayal of the matrix- and mould-making steps separated from the vessel fabrication is also evident in Van der Leeuw *et al's* (1991) study of modern potters in Michoacan, Mexico. Moulds are obtained from specialist mould-makers or *molderos*, which seems often to be an inherited profession (1991: 166). While it is not possible to say whether Chimú potters were responsible for producing their own moulds, or whether a sub-set of potters were executing commissioned pre-set images which index mainly elite patronal agencies, I argue that the role of the potter in the final form of vessel and its iconography can be assessed.

Firstly, potters would be capable of altering moulds, adding or deleting certain features (G.Ramon, pers.comm. 2009). Such instances might be difficult to recognise in existing finished Chimú pots but there are known examples of multiple vessels being produced from the same mould (Parsons 1962), and a number of potential pairs in the data-set. My close examination of such material will indicate instances of mould re-working or re-use.

Secondly the manner in which multiple moulds, or moulds and modelled components may be combined in different vessels indicates the potter's intentionality and decision-making. For example a variety of Chimú stirrup spout bottles depict a standing creature in which the torso and limbs are standardised in the mould, but as the mould user creates the pot they assemble mould parts to form the head, which indicates whether the vessel portrays a feline, monkey or fox (discussed further below with respect to the data-set).

Thirdly, the post-mould labour invested in a vessel can be evaluated – incised details, modelled components, the extent of burnishing or polishing and the use of paint. These features can be tabulated relatively systematically, but using them to infer artisanal agency with confidence is more complex. For example, to take the use of post-mould incisions on vessels: on Sicán mould-made blackware bottles (Sicán being a North coast culture incorporated into the Chimú empire c.A.D.1375) - particularly those of phases III and IV, c.A.D.1000-1100 - shallow polished incisions are a strong feature. Cleland and Shimada (1992:200) term these 'Sicán grooves' noting them as a primary diagnostic of the Sicán lord figure shown on the bottles. They are strongly standardised, appearing as paired vertical or oblique lines often outlining parallel rows of dots on the cheek, and also as short parallel lines on the headband of the figure. The consistency, and association of these markings with fineware contrast with the distribution of incised details on Chimú vessels of the study sample, where as well as being less finely executed than the Sicán versions, there appears to be no regular association with a particular iconographic figure. The Chimú incised elements seem to

be a later feature appearing mainly on vessels manufactured under the Inka occupation. Thus the agencies indexed by the Sicán and Chimú incisions are likely very different; the former are part of a particular iconographic tradition strongly associated with sumptuary goods – the Sicán lord features also in elaborate metalwork and on painted cloth with associations of ritual backdrop (see Shimada 1995 and 1998) as well as on fine ceramics. One might therefore read more of an elite-patronal agency from Sicán grooves, than creative input on the part of the potter whereas I will argue that Chimú incisions may be interpreted more confidently as indicative of the role of the potter in enhancing ‘default’ mould-made imagery.

The extent of polish on a vessel surface can be tabulated but as with the Sicán grooves the degree to which this highly labour-intensive step reflects patronal input rather than artisanal choice, is uncertain. High surface polish is found mainly on high-status, elaborately patterned vessels such as those from elite Sicán tombs (e.g. Shimada and Wagner 2001; Shimada 1998) and the use of such fine vessels with this distinctive metallic sheen would perhaps convey more the user’s ability to co-opt the labour involved, than the physical effort of the artisan.

The use of paint however has different implications for the balance of creative inputs going into a vessel. Owing to the preferred black finish of ceramics, paint does not have a strong presence in Chimú pottery but examples of orange-ware with pigmented details do occur in the sample (discussed below), and painted grey-ware vessels also occur. As noted above, the lack of paint is a strong divergence from the preceding

polychromatic Moche tradition and where it does appear, it serves to enhance the primary moulded imagery. Paint application distinguishes individual Chimú vessels and in some cases was used to mark out a particular vessel made from a standardised mould. Parsons (1962) documented a similar case for four Moche stirrup spout bottles made from the same mould, where the colour distribution and painted details vary slightly meaning that each of the four are unique. These cases are good examples of artisanal re-tooling of ‘default’ moulded iconography.

Feinman *et al*’s approach was chosen for this study because of its development of the concept of the *chaîne opératoire* and the sequential process of object production. In allowing the indexing of the labour going into different parts of the process it permits meaningful comparisons to be made of the techniques and effort involved in the production of different vessels and where in the production sequence these come into play. This provides the information which will allow a discussion of the roles of artisanal agencies in the production of Chimú and Chimú-Inka vessels and how these impact upon the working of goods in other materials and media.

4.3 Recording methods – the Production Step Measure

In the first instance, ceramic data was recorded using Filemaker Pro. Fields were set up to allow a distinction between primary and secondary iconography (mould-made and modelled or applied – see ‘Classification’ section of this chapter for a full description of these terms). Information pertaining to construction, vessel form,

iconography, presence or absence of stippling and lugs was entered into the Filemaker Pro fields; surface work included the extent of burnishing or polishing; colour was also recorded – in most cases black or dark grey, but orange ware was also represented in the data-set.

An adapted version of Feinman *et al's* (1981) Production Step Measure (hereafter 'PSM') was developed and applied to this 'raw' data; the results were then entered into an Access database.

Table 4.1 (overleaf) presents the PSM adapted for use with Chimú ceramics including an example (vessel 1900,11-17.20, a stirrup spout bottle with four chambers in the form of lucuma fruit).

Attribute	Points 1900,11-17.20	
Mould features:		
Double-chambered bottle (single two-part mould)	1	2
Representational chamber (in form of fruit/animal/human as opposed to plain)	1	4
Fine detailing in mould (e.g.stippling, concentric circles around eyes, motifs in panels) – circumferential band or full side	1-2 each side	2
Lugs	1 each	1
Post-mould features:		
Each extra two-part mould (e.g. 3 or 4 chambers, added stirrup spout or surmounting figure)	2	2
Use of standardised torso mould where a selected head is added (feline/monkey/fox)	1	0
Each added element (e.g.modelled whistle, spout or handle)	1 each	0
Mould seams well-smoothed	1	1
Burnished	1	1
Well-burnished (more faceting removed)	1	1
Polished (all faceting removed)	1	1
Incised details (e.g.hair, clothing, facial features)	1-2	0
Paint	1-3	0
Total		15

Table 4.1: the Production Step Measure adapted for use with Chimú ceramics

The analysis of the production sequence is necessarily focussed on those attributes which can be identified on each pot through simple visual analysis. Neither Feinman *et al's* methodology nor the use of it made here, attempts to account for the procurement of raw materials. It is recognised that fabric analysis is important for the information it yields on e.g. raw material standardisation, but such analysis is not

possible here owing to the non-destructive nature of the study and the fact that blackened surfaces of the ceramics make visual comparison of the fabrics very difficult.

Feinman *et al* do not count the primary forming process as a step on the grounds that all vessels undergo this, and similarly, given that almost all the vessels in my sample are mould-made this primary point is taken as the 'zero-point' in the study. However, additional points are indexed for each extra two-part mould used to form a vessel and an extra point is also assigned where a single mould-set is used to form a double-chambered vessel. As with the original measure, all manufacturing steps are weighed equally; each additional two-part mould is assigned two points to distinguish the fabrication of a double-chambered vessel using two mould-sets from a piece produced using only one.

Accurate indexing of iconography would be difficult with this method. Following Feinman *et al* both vessel sides are treated separately (an important point here because where Chimú vessels tend to feature patterning on both sides, on subsequent (highland) Inka examples the main decoration occurs on one side only). Up to two points are assigned per side – one where the patterning is restricted to a circumferential band as is often the case in Chimú-Inka vessels, and two where the design covers most of the side. One point is assigned for a sculptural chamber (e.g. a feline, bird or squash shown in the round); where this is combined with fine detailing such as stippling or concentric lines, one to two further points are assigned per side.

In the post-mould or mould-combination steps a point is assigned where a known standardised mould-set has been combined with other modelled, moulded or painted elements to alter the image. For example the addition of a monkey or feline head to the standard torso mould-set of a standing figure, or a different stirrup or spout being added to a standard chamber representing a squash.

One point is assigned where mould seams are well-smoothed – i.e. difficult to discern. Finishing work is indexed by means of looking at the extent to which burnishing faceting has been removed – no evidence indicates a polished surface which is assigned three points.

Steps which might be thought of as ‘re-tooling’ mould-work include the application of paint and incised detailing. Paint work is indexed according to the number of colours used (usually between one and three) while incisions are assigned one to two points depending upon the extent to which they are used.

PSM data was entered into an Access database (see Appendix 1); a summarised version of this information was created using Excel, displaying for example the totals for mould-work, post-mould and finishing work (Appendix 2). The Excel fields, data and resulting charts are discussed at length in the following chapter.

4.3b Textiles

I also develop a version of Feinman *et al's* method for application to the recording of cloth. This consistent methodology facilitates comparison between these distinctive media. The measure allows an assessment of the amount of work invested in the different stages of fabrication of cloth of different types. Tabulating the raw materials utilised – camelid fibre content in relation to cotton; the use of shell, feathers or metal; the number of colours – permits the identification of high-value, state-sanctioned cloth (see next section on raw materials). The PSM allows comparison of these types of materially-valuable prestige cloth with textiles produced using more readily-available, lower value naturally-coloured cotton in terms of labour inputs and iconography. This data can be utilised to question the extent to which a term such as 'prestige' applied only to colourful, camelid fibre-rich tapestry raising the possibility that certain types of cotton cloth constituted a separate line produced outwith state auspices, but which may have had equally high value among different sectors of the population.

4.3b(i) Raw materials

An important divergence from the ceramic methodology is the issue of raw material analysis, which for Chimú cloth is both possible and appropriate for a number of reasons. Cotton and camelid are the dominant two fibres used in Pre-Columbian weaving, and can be easily distinguished under low magnification. Firstly, establishing how cotton and camelid fibre yarns were constructed (i.e. directions of spin and ply,

number of yarns) is an important indicator of North versus Central coastal provenance as Rowe's (1980 and 1984) work has shown. Secondly, the appearance of camelid fibre in North coast cloth is significant because it is a tangible index of state involvement in production, its use seemingly being tightly controlled (e.g. Boytner 2006). As noted above the camelid fibre yarns from Chan Chan are all highly standardised – spun and plied 2ZS and in a restricted range of colours (Rowe 1980: 86). This fact together with the occurrence of yarn wound into small bundles rather than on spindles suggests that spinning and dyeing was carried out in the highlands before yarns were exported to the coast and redistributed. Cotton yarns on the other hand are very variable, even within fabrics of the same type (Rowe 1980: 86) implying that artisans were producing their own yarn from locally grown crops.

Colour is a second likely index of state influence in textile creation as Boytner's (2006) study of the Pacatnamú cloth showed with respect to the distribution of red dye types across different social tiers. His analysis of the frequencies of cochineal, annatto, gallium and relbunium showed that while cochineal was associated with elite usage, relbunium occurs in negative relation to status (2006: 64-65). Thus, significant traits of the final cloth are established right at the beginning of the production sequence before weaving commences - when cotton or camelid fibre is selected, the yarns formed in a specific manner and then dyed. Yarns may also be wound in pairs at this point, prior to setting up the loom if the cloth is to feature paired warps (a strong Chimú feature.)

4.3b (ii) Production sequences in fibre

A brief account of the creation of imagery in different types of cloth will help to explain the textile PSM developed for this study.

Following raw material processing textile production can be divided into various steps, some of which are 'strategic tasks' common to all woven cloth while others are 'technical variants' diverging to produce specific forms of cloth (to use Lemonnier's 1986, 1993 terms).

Warping of the loom is the first such 'strategic' step and this can take various forms but the main point to be made with respect to how images are generated in fibre and at which stage of the production process this occurs, is to distinguish between warp- and weft-patterned textiles. The warp is the set of lengthwise yarns that are held in tension by the loom; the yarn that is inserted over-and-under the warp is called the weft. In textiles such as tapestry and supplementary weft weaving the wefts are the pattern-bearing elements, with imagery being built up as the wefts are inserted between the warps, but Peruvian weavers also developed a number of warp-based techniques. A notable feature of such warp-patterned cloth is that, as Rowe (1977: 13) explains, the layout of the finished cloth is primarily determined prior to weaving commencing when the warp is put onto the loom. She does show that an additional warp set which travels only part way along the main warp can be inserted (1977: fig.30) and that the design motif can alter along the length of the stripe (1977: 13). Rowe *et al.* (2007: 108) in their study of weaving in contemporary highland Ecuador

also show how supplementary warp may be used, which are controlled separately from the ground warp yarns. The point is though that the planning and calculations required for such warp-patterned cloth strongly contrast with the setting up of a loom for supplementary weft or tapestry cloth. The recording of the 'warping' section of the PSM (Table 4.2 below) takes into account different layouts of colour-patterning, spacing and sectional construction.

The next step is the insertion of the ground wefts which in the case of structures such as tapestry and double weave involves the building up of imagery. This section of the PSM indexes the choice of variation at this stage of the process, taking into account for example different aspects of the tapestry structure which reflect different labour values – high weft counts and shaped edges for example are assigned extra points. With regard to weft counts, these were undertaken where the tapestry weave looked to be particularly fine (e.g. 1954,05.477, 1954,05.478). If average weft counts approached 50/cm these pieces were assigned extra points. Rowe (1984: 130) noted that Chimú-Inka tapestry can be significantly finer than typical Chimú weaving with such weft counts. These two examples I found to average 46/cm. In supplementary weaves the ground wefts are plain, forming the canvas for imagery added in a subsequent step and so only one point is assigned at this stage.

Supplementary weaves are strongly represented in the Chimú repertoire, including for example three technical variants derived from the use of supplementary wefts not found on the Central Coast (Rowe 1980: 90-92). In these methods additional wefts are

placed on top of the ground wefts. The PSM allows distinction between the varying degrees of fineness with which this is done ('fineness' refers to both yarn quality and workmanship, with small-scale, tightly woven motifs being assigned higher labour values than large-scale coarser work) and also the extent of cloth coverage with the design wefts.

Any appliqués or additions to the fabric structure such as feathers, shell or metal plaques or paint are indexed according to extent of coverage – one to three points. Lastly, the PSM considers the assembly stage of production – including embroidery along edges (mainly an Inka trait), and the attachment of separate panels, fringes and tassels.

Table 4.2: the Production Step Measure adapted for cloth

Attribute	Points	Example 1907,3-19.83 (fig.5.9 in Chapter 5)
Initial processing of materials: Colours (natural and dyed) cotton Colours (natural and dyed) camelid fibre	0.5 for each natural colour; 1 for each dyed As above	1 6.5
Warping: Standard warping (<i>attributes below are additional</i>) Warps arranged in colour pattern (warp-patterned weaves) Warps grouped with spaces between (spaced tapestry) Warps constructed in sections (discontinuous warp and	1 1-4 depending upon complexity of pattern 1 2	1 0 0 0

weft) Double warp set (double weave)	1	0
Weft insertion (ground) Standard ground cloth weft (attributes below are additional) Tapestry High tapestry weft count (c.50/cm) or very fine plain weave Weft-interlocking (tapestry) Shaped tapestry (e.g. stepped edging) Wefts grouped with spaces Double weft set (double weave)	1 6 whole piece; 3 band 2 1 where closing slits only; 2 for DWW 1 1 1	1 3 0 0 0 0 0
Additional elements (weft or warp) Figures isolated on ground cloth Background as well as figures covered in supplementary weave Reserve-line patterning (background filled in leaving image picked out by exposed warps)	1-2 depending on fineness 1-3 depending on extent 1-3 depending on extent	0 0 0
Applied work: Featherwork Shell or metal plaques Paint	1-3 depending on extent 1-2 1-2	0 0 0
Assembly: Embroidery at edges Added separate tapestry panel Added fringe or tassels Total	1 3-5 1-3	0 3 3 18.5

4.3b (iii) Textile recording methods

In the first instance as with the ceramics, textiles were recorded using Filemaker Pro. Fields were set up to document the materials (camelid fibre/cotton; spin and ply), colours and weave structure. Again iconography was separated into primary (pre-set and incremental – see next section on ‘Classification’) and secondary (additional or applied) to allow comparison with the ceramics. Each textile record also included three digital images – one of the complete piece, a detail and the reverse.

From this information the PSM data was taken and entered into an Access database prior to being summarised and totalled in Excel (Appendix 2).

4.4 Classification procedures

4.4a Imagery

4.4a(i) Textiles

For this analysis the textile sample was divided up into image categories to allow comparison of material and colour use, of technique and the extent to which standardisation operated in different designs and different periods.

The first two categories, Plain Crescent Headdress figure (hereafter PCH figure) and Toothed Crescent Headdress figure (hereafter TCH figure) are derived from Rowe’s (1984) grouping of Chimú cloth and I describe these in the next paragraph. Rowe’s study sought to classify Chimú textiles into stylistic groups based upon technical

features and iconography. Her data-set included several sets of provenanced material – seven pieces from a cemetery at Chan Chan found by Max Uhle, a larger group excavated from the summit of Cerro Blanco overlooking the Moche pyramids by Uhle, and thirdly a group of textiles excavated from the burial platform of Las Avispas at Chan Chan by Thomas Pozorski of the CC-MV Project where were buried 93 females aged 17 to 24. She analyses this cloth and compares it with material in the Textile Museum, Washington with alleged North coastal provenance to derive four stylistic groups with tentative chronological order. The Bird Lot style is the earliest of these, defined by distinctive techniques not occurring in the later pieces; this is followed by the TCH style, the Pelican style and the PCH style.

Rowe's TCH style refers to the presence of a crescent headdress with an upper toothed edge resting on a triangular cap base, which can be found on birds, humans and Moon Animals. It is probable that the 'toothed' markings represent feathers. The PCH figure style is found on those textiles associated with the Inka occupation period, and the 'type-figure' is a standing frontal figure wearing a crescent headdress with no internal decoration (hence 'plain' as opposed to the feathered-effect 'toothed' variety) supported by a trapezoidal cap; a dotted U-shaped band is commonly placed around the lower part of the face and ears often project on stalks.

The TCH, Pelican and PCH styles are probably very temporally close with the TCH style characterising some of the material from Chan Chan (Rowe 1984: 74). Rowe suggests that there may be some overlap in time between the Pelican and the PCH styles with

the former possibly being favoured by the upper class and the latter produced in bulk for common consumption and export (1999: 474).

The contemporaneous production of several types of cloth for different purposes is a key theme of this research. I accept Rowe's categories but make use of only the TCH and PCH distinction to organise my own material. To qualify as one of these two types of imagery I use the presence of the headdress. Her PCH category includes also felines and the slightly bizarre predatory scenes considered to be later material but I include only the 'type-figures'. I place felines in a separate category because while the sample includes one tapestry piece which is likely contemporary with the Inka period (design features such as striped claws, facial shape and zigzag teeth occur also on PCH figures), the others are not so easily temporally placed. I do not use her Bird Lot or Pelican categories. While the sample does include several pieces which are technically assignable to the Bird Lot group – for example she includes the use of the discontinuous warp and weft method, and a particular form of red tassels in this category- for the purposes of my study I find it more appropriate to include these pieces in a category for non-figurative geometric imagery (see below). Organising my own material iconographically allows me to examine how specific imagery relates to specific techniques. From the results of my analysis I am able to suggest that within each of Rowe's Bird Lot, TCH and PCH categories there are two 'lines' of cloth identifiable on the basis of material and technique which I consider to reference different production contexts (this is discussed in Chapter Seven).

The figurative categories of bird and fish imagery identified within the sample are fairly self-explanatory but do include a diverse range of motifs. Fish occur in various forms from the heavily standardised applied motifs of *Spondylus* and metal, to a type with double-pointed head which is specific to a particular form of warp-patterned cloth (discussed further below). Birds are similarly variable occurring in pairs, in double-headed variety, in diving position and with or without tasselled head appendages.

The geometric category includes design elements such as volutes, frets, diamond grids, concentric diamonds, chess boards and bands. It is not uncommon for geometric elements to occur with figurative ones (for example bird motifs with stepped frets) and in such cases the primary visual form is used for classification. There are several cases of bird motifs being executed in a diamond grid such that neither the figurative or geometric elements takes visual precedence; here the imagery was classed as 'bird' because known examples of these types of diamond grid occur with other motifs such as feline heads or fish.

4.4a(ii) Ceramics

Chimú iconography has been the subject of several single-media studies over the past few decades. Rowe's (1984) work includes comprehensive descriptions of textile imagery which she classified into four stylistic groups (Bird Lot, Pelican, Toothed Crescent and Plain Crescent) based upon technical as well as formal attributes. No study since has attempted to examine the extent to which these categories might pertain to imagery on other media.

Ceramic imagery was classified in a study by Martínez de la Torre (1986; 1987) of the collections in Madrid's Museo de América. In addition to geometric imagery she recognises three main figurative thematic blocks – (i) realistic representations of fruits, vegetables and creatures, (ii) imagery reflecting aspects of Chimú life and activities including vessels in the form of heads and other body parts, frontally-represented personages, fishing scenes, musicians, erotic scenes and maternal imagery. The third thematic block refers to what she terms mythological representations. This includes 'shamans' – composite beings with human and animal elements –, divinities such as an anthropomorphised feline with Moche antecedents (Martínez de la Torre 1987: 155-157; see Mackey 2002) and 'fantastical beings' such as the Moon Animal.

Specific iconographic themes have been the subject of several studies such as those examining the appearance of the Moon Animal in Pre-columbian imagery (Bruhns 1976, Mackey and Vogel 2003, Mackey 2002). Bruhns (1976) discusses the evolution of the Moon Animal from the earliest Recuay and Moche I and II depictions, to Chimú-Inka versions. While she notes the differing techniques of rendering the Animal – positive and negative paint, press-moulded, relief modelling – she limits her discussion to ceramic versions without considering other media. Moore and Mackey (2008: 798-801) in a brief survey of which of the principal Chimú deities appear in which materials note that the Moon Animal features on ceramics, textiles and possibly also on *keros* but not on adobe friezes. The current work will discuss this in Chapter Seven, building upon these previous studies in detailing the materials, techniques and colours used to

create this figure in cloth and ceramics, and the changes apparent in Inka-period material.

Burger's (1976) study of Chimú ceramic iconography focused on four themes for all of which Moche prototypes can be identified. These images include a mythical fishing scene in which an anthropomorphic figure catches a fish monster, scenes of combat involving mythical figures battling a crab and a fish, and one geometric design. With the exception of the geometric painted piece and one painted version of the fishing scene, the Moche originals examined by Burger were all smoked blackware with the imagery rendered in low relief which would make them particularly appropriate for Chimú imitation. Burger identifies varying stages of modification in the Chimú versions, from near-identical copies to highly stylised depictions. While Burger limits his analysis to ceramics, there appears to be no overlap with other Chimú media for the mythical marine combat imagery. Conklin (1979) however describes two Moche textiles, one from Rinconada Alta in the Santa Valley featuring a crab-man (1979: fig.20) and the other from Galindo and featuring a small Moche man tapping the claw of a giant crab (1979: figs.1-3) so it may be that Moche ceramic and textile imagery is more closely affiliated than is the case in the Late Intermediate Period. While the mythical fishing scene was relatively rare in Moche art – Burger knows of only four vessels out of the vast ceramic corpus (1976: 95) – it becomes much more common in the Chimú period with Burger citing twenty three or more examples, and the current sample includes three Chimú versions and one Chimú-Inka piece. On the other hand the mythical battle with the crab which apparently is also shown on Moche cloth,

occurs on two Chimú and twenty three Moche vessels in Burger's sample (1976: 98-99). While the current study cannot assesses the Moche evidence further, a focus will be the extent to which ceramic and textile imagery parallel one another within the Chimú and Chimú-Inka visual systems in order to consider the relationships between artisans working in different media.

An important source of Chimú iconographic works in a non-portable context is that of architectural friezes. Pillsbury (1993, 1995) undertook an extensive study of the friezes at Chan Chan documenting technical construction and imagery. In her discussion of individual friezes such as the Platform de las Virgenes of Ciudadela Uhle, one of the early works, she relates motifs to textile and metal imagery (1993). She also notes the appearance of a Moon Animal-like figure in this frieze featuring prominent teeth, saw tooth back and a tail ending in a triangle with three appendages which may contradict Moore and Mackey's (2008: 798) suggestion that this deity does not appear in friezes.

An earlier work on architectural iconography which focused on a specific scene is that of Hoyt and Moseley (1969-1970) on the adobe frieze uncovered by Samuel Burr in 1969 during the work of the Chan Chan-Moche Valley Project. This frieze is composed of a series of horizontal bands featuring various motifs including fish, crustaceans, avian and anthropomorphic figures which the authors are able to correlate with imagery on Chimú ceramics. Both types of fish in the frieze – the catfish and a smaller kind – appear on Chimú-Inka vessels in low relief (1969-1970: 47); similarly the three types of small bird motifs present in the frieze are comparable to figures on late Chimú

vessels (i.e. those dating from the phase just before Inka conquest) and on Chimú-Inka pieces (1969-1970: 48). The larger spear-bearing birds on the other hand, I suggest, have close counterparts in Chimú tapestry such as Am1896,509 of the Toothed Crescent Headdress style.

Among the most iconographically complex Chimú works are executed in silver and gold. These include elaborate scenes relating to *Spondylus* acquisition and fishing and involve personages in standardised regalia which may be used to identify related depictions in other media. Rios and Retamozo (1982) analysed a set of twenty silver and gold vessels, some of which are rattles, said to have come from a structure known as 'la Huaca Misa' affiliated with Ciudadela Rivero, Chan Chan (1982: 2). They classified the figures shown on these vessels into categories – anthropomorphs of several types (one with fish and eels, and one seated and wearing a headdress), a quadrupedal dragon-like figure, personage in a crescent headdress associated with such characters as kneeling anthropomorphs or anthropomorphs fishing with a net (1982: 15-19). The forms of the headdresses in particular suggest connections with figures shown on ceramics and cloth – for example the conical headgear sported by the personages fishing is very similar to that shown on the crew of ceramic vessels depicting, in sculptural form, totora boats. The double-pointed stepped headdress shown on two of the small figures associated with the dragon (1982: figs.14b and c) and also in one of the fishing scenes (1982: fig.7) closely parallels that featuring on certain textiles (e.g. see Stone-Miller 1994: pl.44).

Moore and Mackey (2008: 798-801) outline the four principal Chimú deities and their appearance on ceramics, textiles, friezes and keros. They note that these depictions are standardised but do not consider the formal variations which are apparent in figures shown both in the same, and in different media. The first of these deities Moore and Mackey (2008: 799) term the Staff God – a frontal figure bearing a staff in either hand and wearing a crescent-shaped headdress, and the only one of the four according to these authors to appear on friezes, keros, ceramics and textiles. The current study has classified such figures as ‘Crescent Headdress figure’ owing to the lack of examples in the sample bearing two staffs – steering boards/paddles and bags in one hand with a staff in the other are more frequently seen (e.g. 1907,3-19.645; Q82,877). The term ‘Crescent Headdress figure’ is sufficient to distinguish these figures for comparison with the other deities in the Chimú pantheon but analysis of the study sample makes it clear that there is significant formal variation within the crescent headdresses shown on ceramics. For example, some project on stalks from the top of the head and appear like a *tumi*, while the shape of the crescent tips is far from standardised, ranging from squared off to pointed. Usually there occurs a semi-circular cap-like element above which the headdress sits but this is not always present, and headdresses may or may not feature internal markings.

In order to allow comparison with the cloth sample, this study segregated the Crescent Headdress figure category into Toothed Crescent (TCH) and Plain Crescent (PCH). Rowe (1984) had previously suggested that these two types of imagery were likely very temporally close in textiles, pertaining to the period immediately before and

during the Inka occupation of the North Coast. However, no work since has attempted to consider whether this is also the case for ceramic depictions or not, or to assess the extent to which variations in vessel construction, formal detail or quality of finish can be identified for the two types of ceramic imagery. This study shows that significant differences occur between TCH and PCH figure imagery in cloth with respect to factors such as colours used, weaving technique and in the assembly of the textiles (Chapter Five). It seeks to determine whether similar patterns of variation are to be found in ceramics.

The second of Moore and Mackey's (2008) Chimú deities is referred to as the Plumed Headdress Deity, also frontally facing and characterised by a headdress which bifurcates with several plumes or tassels falling down to either side (2008: 800). Moore and Mackey suggest that this figure is related to human sacrifice on the grounds that he is apparently often shown bearing *tumi* in one hand and a severed head in the other. The current study sample includes only two such figures, insufficient to analyse as a separate iconographic category. One example (1902,5-16.8) is shown on both outer faces of a double-chambered vessel portraying the third deity, the Goddess, bearing a bag in one hand and a staff terminating in what appears like a human hand in the other. The second example (1954,05.105) featuring on a spout-and-handle bottle, features upraised arms and is flanked on either side by a crested bird. These two pieces do not support Moore and Mackey's (2008: 800) suggestion that this Plumed deity is rarely shown with other mythical beings or animals.

The study sample includes six representations of the third deity the Goddess, three of which are Chimú with the other three assigned to the Inka occupation period based upon the presence of serrated chevrons (one of Scheele and Pattersons' (1966 :25) traits which characterise Late Horizon material). This figure wears a distinctive double-pointed headdress which as Mackey's (2002) study showed, altered in appearance from Early Chimú versions which were square with two sharp corners, to the bifurcated examples with rounded corners characteristic of later phases. Two of the Chimú Goddesses in the sample bear a child in their arms (1941,4.65 and 1902,5-16.8) while the Chimú-Inka figures, being fully mould-rendered with no modelled applications, feature the arms flat on the chamber top (see below for detailed treatment of moulded versus modelled and applied elements). Moore and Mackey (2008: 800) suggest that the Goddess is always shown atop vessels, the chambers of which feature designs symbolizing the sea and the moon. This is true of two pieces in the sample – 1926,3-6.9 displays a rather garbled version of a mythical marine combat scene on the outer surface of the front chamber, with three vertically-oriented fish motifs on the outer surface of the rear chamber. St.333,2 features crescent and circular symbols presumably representing the moon and sun on the chamber. Another representation of the Goddess though, (1902,5-16.8), as mentioned above is combined with a depiction of the Plumed Headdress Deity on the chambers.

The fourth principal deity is the Moon Animal, mentioned above. Moore and Mackey (2008: 800) note that both fox and feline elements are visible in depictions of this figure – arching cat-like body and pointed, canine face. The Animal features a long

projecting tongue and wears a crescent headdress. The study sample includes twelve examples of this figure – three Chimú, seven Chimú-Inka and two pieces which are likely Colonial in date. The Chimú figures are primary motifs and wear toothed crescent headdresses while those on the Inka-period vessels are secondary motifs (i.e. smaller figures present together with other motifs) and wear plain crescent headdresses.

4.4b Production techniques

The aim of this section is to establish a common language to describe Chimú production sequences which is applicable to the media of ceramic (vessels and friezes), cloth and metal. A broad classification of the sequence of production steps as pre-set/calculated, incrementally built up, adding on or assembling allows the manufacture of different objects to be compared at different levels. For example the point at which colour is emplaced, or imagery fixed or built up can be identified for different techniques and materials, showing cross-craft parallels in the extents to which imagery is created in the initial forming process, or in later stages of production.

4.4b(i) Ceramics

The Chimú use of moulds as primary pottery-forming technique was inherited from the preceding Moche culture. Chimú innovations included construction of entire vessels in single mould-sets (incorporating, rather than adding stirrup spouts for example); the inclusion of imagery within the moulds rather than applying fine-line

paintings, and favouring smoked blackware over the previously common oxidised and painted redware – developments all reversed by the Inka.

Variables in the moulding sequence are apparent in the choice of vertical or horizontal moulds, the number of moulds to be used per vessel, and whether spouts, handles and bases are to be added or incorporated (Table 4.3). The Chimú, as did the Moche, overwhelmingly opted for two half moulds joining in a vertical plane with much less emphasis on the use of horizontal moulds. Moulding is one of Donnan's (1965) 'primary' forming techniques. My scheme identifies it as 'primary pre-set' to facilitate analogies with cloth production and for reasons which will be clarified below. The two other primary forming techniques used on the North coast are coiling and paddle-stamped *paleteada*. While moulding was the main technique favoured by the Chimú, *paleteada* dominated the utility ware of the coast north of Jequetepeque through the Chimú and Inka occupations (Cleland and Shimada 1998: 112).

PRIMARY			ASSEMBLY	SECONDARY	FINISHING	
PRE-SET moulding	vertical	single bi-partite 'all-inclusive'	working and seaming edges inside mould	ADDITIONS	wiping	
	horizontal	multiple mould-sets		Pre-formed application: stamping		
				Incremental application: modelling incision excision		
INCREMENTALLY BUILT UP				modelling	burnishing	
coiling paddling (true <i>paleteada</i>)				incision	polishing	
				excision		
				Re-working: modelling	painting	positive
						negative

Table 4.3 Ceramic technique classification (adapted from Donnan 1965)

Two secondary techniques employed in Chimú ceramic production identified by Donnan (1965) with respect to Moche pottery, are modelling and stamping (see Table 4.3). It is important at this point to distinguish stamped ware from true *paleteada* stamped, because the latter involves the vessel being both formed *and* decorated by means of this technique (Cleland and Shimada 1998: 112), while 'stamped' refers only to decoration. Tschauner (2006) found evidence of both moulding and paddle-stamping at the Chimú pottery workshop at Pampa de Burros, but he stresses that the stamps indicate paddling as a *decorative* technique only – there were no anvils or wooden, handled paddles to suggest that paddling as a forming technique was

practised (2006: 178). I have identified stamping and modelling as 'secondary additions' and divided them into three types to accord with Donnan's two forms of stamping and two of modelling (both discussed further below in the section on iconographic creation). To these, I add incision and excision as present in the post-mould secondary stages of Chimú ceramic production. 'Incision' refers to fineline markings made with a sharp instrument – e.g. garment and facial features – and 'excision' to the removal of areas of clay to create marked relief (see below).

Finishing techniques applied to Chimú ceramics include wiping, burnishing, polishing and painting. To record evidence of the former three in material studied, surfaces were marked on a grade from wiped (i.e. presence of cloth marks), to burnished to well-burnished (based on degree of removal of burnishing faceting), to polished (all faceting removed). The extent of finishing on different parts of the vessels was also noted – e.g. chamber polished but base and handle undersides burnished. Based upon material examined thus far (c.230 ceramics in the BM plus others in Peruvian collections, and published pieces) there is a wide range in degrees of finishing – particularly when comparing Chimú material with Chimú-Inka pieces.

The final finishing technique is painting, in various forms – positive or one of three types of negative methods (see Xesspe 1965-1966). Painting is a very strong feature of Moche ceramics but becomes much rarer in the corpus of Chimú material with the choice of smoked blackware – this is not to say that there is less Moche emphasis on the other finishing techniques, because these vessels are also highly polished as well as

painted. However, the analysis in this thesis suggests that pigment is applied to Chimú vessels more under the Inka occupation. Quantifying the investment in secondary and finishing work shown in the sample vessels will allow these suggestions to be tested and the extents to which potters re-worked the primary mould-made image (potentially a state-issue template, or at least one for which they were not responsible). In this manner changes in the patterns of artisanal agency relative to ‘planner’ input can be revealed in relation to specific iconographic categories, and temporally under the Inka state.

4.4b(ii) Textiles

Previous approaches to textile classification include that of Junius Bird who divided fabrics into three categories – structural, super-structural and non-structural (1963: 46, cited in Brugnoli and Hoces de la Guardia 1995: 194). This is a useful summary of structures in relation to the comprehensive system of Emery (1966).

The scheme devised for this study (Table 4.4 overleaf) combines a simple tri-partite division with a modified version of Emery’s classification. I use the term ‘pre-set/calculated’ for the first class to distinguish between those fabrics in which imagery is planned while the fabric is being warped (as noted above it is acknowledged that the initial pattern set on the loom could be changed with additional steps) and those in which imagery is created incrementally during weft-insertion (see further below in ‘iconographic creation section’). ‘Pre-set’ techniques used in Chimú textiles in my

classification include warp-faced weaves and discontinuous- warp-and-weft. This is not a distinction made by Emery who classes warp-faced structures along with weft-faced ones in her 'simple plain weaves' category (1966: 73-77), but it is important for my arguments regarding image-creation.

	Plain weaves	SIMPLE WEAVES		COMPOUND WEAVES	CROSSING AND RE-CROSSING ELEMENTS
PRE-SET/ CALCULATED		warp-faced			
		discontinuous warp and weft			
INCREMENT- ALLY BUILT UP		weft-faced	FLOAT WEAVES twill	<u>Compounded by combining weave structures</u>	complex gauze
		tapestry	plain weave- derived float patterning	double cloth	
ADDITIONS	ACCESSORY FABRICS AND COMPLEXES			<u>Compounded by adding sets of elements</u>	ACCESSORY OBJECTS
	<u>Superimposed:</u> appliqué			supplementary weft	paint
	quilted			supplementary warp	featherwork
	<u>Seamed together:</u> fringe bands			complementary warp or weft	beadwork shellwork
	tassels				metal plaques

Table 4.4 Textile classification (after Emery 1966)

The techniques I have classed as 'incrementally built up' are weft-faced weaves, tapestry, Emery's 'float weaves' (1966: 91) and her 'compounded by combining complete weave structures' double-cloth (1966: 155-159). Her system classes supplementary weaves along with double weaves as 'compound weaves' but I find it more useful to place supplementary weaves as 'addition' and double weaves as 'incrementally built up' because in the former imagery is added to a ground-cloth, while in the latter the image is created incrementally as part of the ground-cloth.

My 'addition' techniques then, with the exception of the fore-mentioned supplementary weaves, accord with Emery's 'structures accessory to fabrics' – appliqué, quilting, paint, featherwork etc. (1966: 231).

4.4b(iii) Architectural friezes

My classification of Chimú architectural friezes draws on the work of Pillsbury (1993, 1995). She identifies two types of frieze (in terms of technical construction) – an earlier additive form in which friezes were applied to walls and a later subtractive variety which were excised directly from a plaster covering – see Table 4.5 below. It is suggested that moulds may have been used to place general figures (e.g. the Burr Frieze, Velarde) but which were then individually cut producing the observed variation in size of repeated motifs (Morales p.c.1990 in Pillsbury 1995:52) – but generally modelling seems to have been the primary forming technique rather than moulding when considering the creation of the basic images of additive friezes. The secondary

techniques applied to ceramic vessels apply equally to adobe friezes – incision with metal tools to form details on motifs, and also presumably the re-modelling of parts. Excision though, with regard to frieze rather than ceramic production is clearly a primary technique used on later subtractive examples. Concerning finishing methods, sometimes a final cover or pigment was applied over friezes as in el Sector Policromado in Gran Chimú where paint occurs in very thick layers (Pillsbury 1995: 49).

However, the great swathes of walling at Chan Chan which are constructed in rhomboidal lattice form (like fishing nets) should also be considered as friezes, supplementing the more figurative examples. These appear to be constructed in an incremental manner – i.e. they are created as the wall is built up of adobe bricks with the patterning inhering in the brickwork itself rather than being an applied or excised image. I therefore consider it useful to apply to the friezes a similar tri-partite division to that outlined above for cloth, particularly in view of the conceptual and formal relations I will be drawing between these two media later in the study.

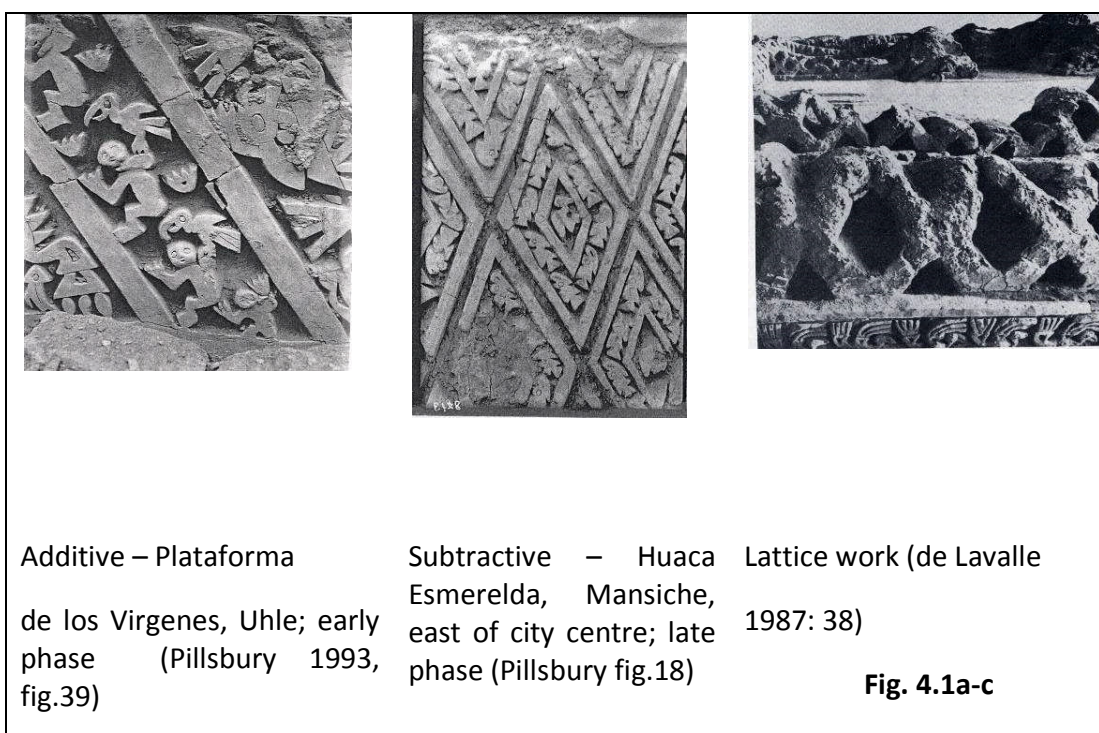
	Construction	Techniques	Example
INCREMENTAL	built up incrementally	bricks laid in pattern, then plastered	lattice work
ADDITION	additive	modelled <i>in situ</i>	Los Buceadores, Uhle;
		sculpted and applied	Plaza de los Pelicanos, Laberinto
PRE-SET/ PLANNED	subtractive	planned and excised directly on wall; moulds to place figures; strings map out design	Tule Boat Frieze; Burr Frieze, Velarde

Table 4.5 Architectural frieze classification

Thus, in the scheme presented here lattice work is ‘incremental’ and the early additive friezes are considered ‘additions’ – a term which is highly appropriate to describe the images which Pillsbury notes (1995:50) were (at Chan Chan) more likely to have been sculpted elsewhere and applied, than modelled *in situ*. (Based upon motifs being separated, the lack of tool marks, and the less planar surfaces).

The later subtractive friezes are slightly more problematic to classify. Insofar as they are images applied to walls, they are ‘additions’. However they are created in a very different manner to the additive examples in that the artisans have almost drawn them out of the walls as though freeing forms inherent in the structures. Cords were probably used to map out geometric borders (Pillsbury 1993) such as the checked design on the walls of Squier and the faint vertical guidelines still evident dividing the Burr Frieze into panels (Morales, p.c.1990, Pillsbury 1993: 51). This makes the planning of the subtractive friezes highly analogous to warping a loom to create a warp-

patterned textile. In such fabrics, as will be discussed further below, the design is to an extent pre-set right from this initial stage of placing the warps on the loom and as in the textile classification outline above, term ‘pre-set/planned’ is appropriate for these later friezes.



4.4b(iv) Metal objects

Central Andean metallurgy is based upon the plastic deformation of metal, forming it through working rather than casting, and the use of individual two-dimensional sheets as stock elements from which three-dimensional forms were constructed (Lechtman

1996:36). The Chimú were heirs to a highly sophisticated metal working technical system which was fully developed by the earlier Moche and Sicán, and which the Chimú expanded and intensified. This system was composed of numerous methods for hammering, casting, manipulating surface relief and colour, and assembly of components and can be classified using the terms 'primary', 'secondary' and 'assembly'.

One primary forming technique is casting, three types of which were used in the Central Andean zone as discussed by Lechtman (1988: 348-352). Two of these were specific to the Moche-Lambayeque region, one being the lost wax method used to form complex staff-end ornaments with pendant bells, *tupus* and spoons (e.g. Cordy-Collins 1996: 266-269 for the latter two items). The other form of casting is termed 'slush' casting on account of the metal being manipulated while in semi-frozen state (Lechtman 1981:103). This was used particularly by the Chimú to produce socketed metal agricultural tools and involves the use of open moulds of ceramic or sand. Such castings could be solid or hollow utilising a baked clay core (Lechtman 1981:97).

However, forming metal on the North Coast was predominantly based on the hammering of sheet metal out of ingots and assembling it into three-dimensional forms. Attendant to this tendency to work metal via plastic deformation developed a host of what might be thought of as 'secondary' techniques on the grounds that they are used to apply images and effects to object surfaces, but which depend on the same motor skills as the primary hammering of sheet metal and cannot be readily separated

from it. These include the various forms of embossing – hammering a sheet over a wooden matrix, a stone template, or into a trough or cleft mould to provide shape (see figures 4.2(a) to (c)).



I view this hammered embossing as a primary technique where it forms the vessel in a single step over a matrix. But where the embossing is purely decorative and done over/into motif templates such as that in Fig.4.2(c) above then I class the technique as ‘secondary incremental’ along with repoussé (the latter referring to freehand working of the metal with a chisel or pointed instrument, while the metal sheet is positioned over a giving substance like clay to give form in relief). Both forms of embossing are a direct continuation of the hammering process which forms the sheet metal and as such

are primary techniques in the sense that they utilise the plastic deformational qualities of the metal. One of the two gilding/silvering treatments developed by the Moche and used by the Chimú has been studied extensively by Lechtman (e.g. 1977, 1984, 1988) and is termed 'surface enrichment' or 'depletion gilding'. It could be seen as a primary technique because it is a necessary result of the repeated hammering, annealing and scaling involved in the formation of sheet metal from binary or ternary alloys of the copper-silver-gold system. However, it is recognised that the achievement of the gilded surface goes significantly beyond the initial sheet metal formation, requiring much repetition of the hammering and annealing process – such that it is a choice or a 'technical variant' rather than a *tâche stratégique* (Lemonnier 1990) and should thus be considered as a secondary technique. It is 'incremental' rather than 'additional' because, unlike the second gilding mechanism of electrochemical replacement which plates gold onto copper components prior to assembly, depletion gilding involves no 'additions' – the resulting bright silver or gold surface is already present within the pinkish cast alloy and is merely rendered visible by the artisan. My classification thus places electrochemical replacement plating (primarily a Moche technique) as a 'secondary addition' technique along with other image-endowing methods such as engraving, *satinado* and cutting out to give openwork effects which employ chisels, tracing tools and punches rather than hammers and which do not involve plastic deformation of the sheet metal.

Cast	PRIMARY PRE-SET	SECONDARY	ASSEMBLY	
	Lost-wax casting Slush casting: solid or hollow (with baked clay core)		Single-piece casting (no assembly) or piece-mould casting and metallurgical seaming	
Hammered	Embossing (forming vessel in single step over a matrix – e.g. Fig.2.1d (i))	INCREMENTAL Embossing (incrementally - Fig.2.1d (iii)) Repoussé Depletion gilding	Metallurgical	Soldering Brazing Welding
		ADDITION Electrochemical plaiting Engraving Cut-out		Tab and slot Crimping

Table 4.6 Metal-working technique classification

The third class of metal working technique are those relating to the assembly of objects and are discussed by Lechtman (1988: 360-362) who distinguishes two categories – metallurgical and mechanical. Of the metallurgical type – those requiring heat for bonding – soldering, brazing and welding are the main varieties. The latter involves melting along the edges of the two pieces of metal to be joined such that the edges fuse together - a process which can be compared with the seaming of two halves of a ceramic vessel inside the mould, assuming that a ‘filler’ strip of clay is not

added which would make it more akin to soldering (in the latter technique's use of a filler metal).

It is the forms of mechanical joins developed on the North Coast though that compare with the methods of textile assembly – an observation pointed out by Lechtman (1988: 362). Tabbing, slotting and crimping were all employed to securely link portions of metal sheet, and crimping – where an edge of one metal sheet is bent tightly over the edge of the other – is particularly akin to creating a seam between two cloths.

4.4c Image creation

The manner in which imagery is built up using different techniques and in different media is the second attribute to be emphasised in recording the Chimú material, and is summarised in Table 4.7 at the end of this section.

Classifying the extent to which images can be 'pre-set' (e.g. in a mould, but the potential to be re-worked is discussed below) allows (i) conceptual relations between the creation of aesthetics in clay, cloth and metal to be drawn and insights into how concepts and skills might be shared by artisans working in different media. (ii) This classification is the first step in quantifying 'planner/practitioner' roles (potentially state/artisanal) in the production of different objects.

4.4c(i) Ceramics

The operational sequence for producing a mould-made pot begins with the construction of a model or matrix from which the mould sections can be formed. This matrix might be an actual object such as an ear of corn, an existing vessel, or it might be formed of clay (Donnan 1965: 118). Thompson (1963) has published a description of a Chimú-Inka matrix from the Huarmey Valley which would have formed a template for a face-neck jar. It is clear thus, that the primary iconographic-emplacing step is segregated temporally and/or spatially from the actual production of the vessel, and that since the iconographic elements are all present in the mould there is no onus on the producer to add anything. The act of production could be repeated indefinitely to constantly reproduce the original, under the control of the *moldero* or whomever had charge of the matrixes and/or moulds (cf. Cummins 1998: 208-210).

This iconographic pre-setting does not apply to the same degree to the *paleteada* technique, which although also involving application of imagery by a tool potentially formed elsewhere (i.e. the paddle) the creative process incorporates a number of steps. The base is formed on top of a potters' plate, chamber walls are built up with thick coils or filets, neck and rim are formed from finer coils and shaping and decorating is carried out throughout with paddle strikes against the interior anvil (Bankes 1989: 39-42). Thus the walls are formed and iconography added incrementally rather than in a single step as with moulding.

Alternative methods for decorating pots are stamping and modelling. With stamping Donnan (1965: 120) distinguishes two types: either the moist clay of the formed vessel was pushed out into the stamp (which are made in the same way that mould-matrixes were, over shells, corn or depictive clay matrixes) or the stamp containing extra clay was applied to the exterior of the vessel, forming an appliqué. Modelling discussed by Donnan (1965: 121-2) again in reference to the Moche tradition includes the shaping of clay added to the vessel, and the re-shaping of clay already part of the vessel to add or enhance imagery. In both cases of stamping and modelling, iconography is an addition occurring once the pot has been formed. This is also the case for the application of painted imagery.

From the above three basic alternatives for the emplacement of iconography onto a vessel can be derived – (i) iconography is pre-set as in moulding, (ii) it is added incrementally as the piece is built up (coiling and *paleteada*) and (iii) it is applied post-forming (stamping, modelling and painting).

These choices are apparent also in the different techniques of cloth production and correspondences can be shown between these ceramic techniques and the specific textile methods utilised on the North Coast of Peru.

4.4c(ii) Textiles

Peruvian weavers utilised a number of techniques which produce warp-dominant cloth (i.e. the warps are tightly packed such that wefts do not show), a number of which are found on the North Coast. As noted above the planning and calculation required in setting up a loom for warp-patterned cloth is much more involved than is the case for weft-faced weaves in which warping occurs first, but the added wefts are the pattern-bearing element. I would like to suggest a conceptual link with the pre-determined imagery produced in a moulded ceramic, even if the potential for spatial segregation of the iconographic and the formative processes is not the same with weaving. The warp-patterning techniques used by the Chimú produced distinctive visual effects. The discontinuous warp and weft (DWW) fabric structure appeared down the length of the Peruvian coast although the rendering of large scale designs was a northern trait. (Recent work by Dransart (2014: 220) has now shown that the DWW structure is not limited to Peru, appearing also in Colombia and Bolivia). The possible processes used to create such cloth have been the subject of previous studies (e.g. Rowe 1977, Strelow 1996, Rehl 2006). Whichever methods were used to accomplish it, it was highly laborious to set up and weave. Complementary-warp weave structures produced double-faced patterns and were also created by the Chimú.

Other textile techniques involve the incremental creation of iconography as the weaving proceeds, and these produce structures such as plain weft-faced weaves, tapestry, gauze and double cloth. I relate these structures to paddle-stamped

ceramics. The manner of building up such vessels with coils of clay, before using the paddle to shape them and add imagery can be compared with the construction of a tapestry cloth in which the pattern-bearing wefts are inserted gradually and packed down with a weaving sword.

Cloth production by means of 'addition' techniques was also used extensively by the Chimú – for example there are three supplementary weft weave structures not found on the Central Coast (Rowe 1980: 90-92). Here additional wefts are emplaced on top of the pre-formed ground cloth to build up designs in the same manner in which extra clay is added onto a ceramic piece and modelled to form certain design features. It is conceptually different to Donnan's (1965:121) second category of modelling in which clay already part of the vessel is re-worked – to which I would draw a parallel with the 're-working' of the ends of a piece of cloth into a fringe or tassel.

Finally, Chimú 'addition' textile technologies make great use of the addition of pre-formed elements to cloth surfaces – tapestry appliqué patches, tiered tassels, cut shell, bead and metal figures. Since these methods involve application of complete imagery (a carved shell fish motif for example or a strip of tapestry)- rather than building up secondary imagery as with supplementary weft - they have much in common with stamping pottery where pre-formed imagery is applied to a vessel sides.

4.4c(iii) Metal objects

With regard to iconographic emplacement, the most obvious case for pre-set imagery might appear to be that in which the prototype image is rendered in a ceramic mould

from which an index in metal is directly executed by means of casting (in Gell's 1998 terms). However, prototypes also determine the appearance of worked metal objects and as with ceramics and cloth, iconography can be classified as pre-set, incrementally built up with the structure, or added.

The Sicán and Chimú *vasos retratos* or effigy vases, were shaped by hammering a sheet of metal over a single carved wooden matrice (as in Figs.4.2(a) and (b) above), such that the image transfers from the outside of the wooden medium onto the inside of the metal form. This is the reverse process of moulding a ceramic vessel, in which iconography transfers from the inside of a mould to the outside of the vessel.

Positive or negative repoussé imagery can be obtained with or without the use of a matrix. Carcedo de Mufarech (1998), in her study of metalworking tools in the MNAHP, Lima discusses several examples of wooden and stone *embutideras* – matrixes with semi-spherical negative impressions in the surface across which sheet metal was hammered creating such low relief patterning as seen on e.g. Moche necklaces. She illustrates one extraordinary rectangular matrix in the Museo Bruning which features sixty sculpted circular motifs executed in five lines, by means of which high and low relief designs could be rendered on a metal sheet worked from back or front. Designs on this template are perfectly spaced and each of the four main lines consists of two designs – six on the right and six on the left. She shows a Vicús nose ornament and Moche earpool, both of which feature imagery likely executed in this manner.

Building up iconography in this way using a template from which motifs are selected is comparable to the process of weaving following a pattern board (for example like those recovered from Inka fill at Túcume (Narvaez 1995: 100) and also those Chimú-Inka plaques from Manchán featuring strips of Inka textile designs likely serving to guide local craftsmen producing Inka-style tapestry (Mackey and Klymshyn 1985: 276). It is possible that in fact textiles themselves functioned as templates for iconography executed on ceramic and metal vessels.

Metal objects also incorporate 'added' imagery as is the case with inlays and pieces assembled from multiple components, and metal can be secondarily re-worked when assembly involves the application of heat as in soldering or welding in an analogous manner to the re-working of clay already a part of the vessel.

		Ceramics	Textiles	Metal	Friezes
Pre-set (via form of physical template)		Moulding	Warp-faced techniques; Discontinuous warp and weft	Embossed over stone/wooden matrix	Subtractive – planned and excised directly on wall. Moulds or strings to guide design.
Incrementally created		Coiled Paddle-stamped	Tapestry Plain weaves Double cloth Gauze	Embossed over unit templates; repoussé - designs executed while metal is pliable	Lattice work built up with adobes
Added	Pre-formed application	Stamping – with extra clay applied to wall	Appliqués Shellwork	Inlays Assembled components (mechanically joined)	Additive – sculpted elsewhere and applied
	Incremental application	Stamping – vessel wall pushed out into stamp Painting	Supplementary weaves Featherwork Painting	Engraving Cut-out <i>cortado</i> technique	Additive – modelled and built up <i>in situ</i>
	Re-working	Re-modelling of existing features of clay	Fringes made by extension and looping of wefts	Soldering and welding – assembly via heat-application re-working metal	Instances of friezes being remodelled (sometimes with same imagery)

Table 4.7 Classification of iconographic emplacement

4.4d Relief effects – the topography of cloth and clay.

Chimú material culture shows a marked emphasis on surface relief effects. This is particularly apparent not only in the wide range of reliefs obtained in clay and metal via exploitation of the plastic deformational qualities of these materials, but also I argue in cloth with the extensive Chimú development of ‘addition’ techniques. Further, examples of the various relief types can be identified in each medium and depending upon how the methods used to achieve them relate, they imply the movement of aesthetics or perhaps more engrained concepts and skills across materials.

Chimú artisans created topographical surfaces in clay and metal by ‘pre-set’ means in moulds and over matrixes, and by secondary addition alterations such as repoussé, incision, excision and stamping. Topographical qualities are also strongly marked in Chimú cloth – I would say more than in the cloth of any other Pre-Columbian culture - owing to the full exploration of the potentials of supplementary weft weaving.

Pereyra and Macedo’s (1989) survey of the pre-Columbian ceramics in the MNAAHP, Lima provides a useful categorisation of relief, which I will apply also to the textile and metal media.

These authors’ ‘high relief’ category for example refers to imagery protruding above the planar base of the ceramic chamber walls. This can be achieved in the mould or by pushing clay walls out into a stamp, and in metal by means of hammering a sheet over a matrix or into a template. A visually similar effect is achieved in weaving using a

supplementary process to create raised forms isolated on the ground cloth – but since this imagery is an addition, the effect does not relate conceptually to that obtained using ‘pre-set’ means in clay or metal. Closer conceptual relations can be drawn between high-relief imagery created using the secondary repoussé technique on metal sheets, and bands of complementary weave textile imagery. Both involve the manipulation of a surface such that one face behaves reciprocally with respect to the other, creating relief imagery. One face of the metal features the image in negative relief relative to the positive image on the other face, while in the cloth the two (or three) yarn colour comprising the design exchange faces such that the colours are inverted relative to the other face.

‘Low relief’ imagery on ceramics is contrasted below the planar level of the walls in a sunken panel obtained via the mould, or by scraping or stamping (pushing design in, rather than walls out). Similarly, working metal sheet from the front rather than reverse also yields this effect. While moulding and embossing are ‘pre-set’ methods, the methods required to obtain the cloth counterpart of low relief are ‘additional’ (in that the pattern-bearing wefts are surplus to the ground-weave) – thus relating it aesthetically rather than technically. Where supplementary yarns are applied extensively over a ground cloth the image appears to stand out in negative relief relative to the upper supplementary layer.

The effect of fineline incisions can be rendered on ceramics either in the mould (most common in Chimú vessels) or by incising features with a sharp instrument post-mould

– and similarly on metal objects via secondary engraving. The woven counterpart to such negative fineline detailing is cloth featuring the Chimú-specific ‘reserve-line patterning’ (Rowe 1984: 57) where the supplementary wefts float mainly across the front of the fabric and are caught down at regular intervals beneath a single warp or warp pair which form the design outline. The background is thus formed first, leaving the design outlined in negative in the exposed ground cloth. These techniques relate conceptually where the effect is rendered using post-mould incisions on ceramics (e.g. in Chimú-Inka examples) but only aesthetically where the design is transferred from positive lines inside the mould – as is usually the case with Chimú ceramics.

CHAPTER FIVE: PRODUCTION LINES IN COLOUR, IMAGERY AND STRUCTURE –

THE TEXTILE DATA

This chapter presents the results of the textile analysis, firstly examining colour distribution across the sample with a view to identifying particular colour palettes in association with types of imagery and the material and technique used. The study then explores the relationship between the different image categories and the methods used to create them – pre-set/planned, incremental and additional – in order to assess the degree of sequential construction.

5.1 Colour in cotton and camelid fibre yarns

In order to compare the diversity of colours (both natural and dyed) used in different types of cloth an indexing system was devised which assigned one point to each dyed colour and half a point to each natural colour (see Chapter Four). Values were totalled for the cotton and camelid fibre yarns used in each textile and the minimum, maximum and average values for each iconographic category plotted on charts to allow comparison across imagery. A study of colour in archaeological textiles must recognize the effects of differential fading on colours now present. Shades such as green and purple are shorter-lived – and more difficult to produce – which tends to result in an emphasis on shades of brown, gold and red in the Andean palette (Stone-Miller 1994: 126).

Cotton tends to be used in its naturally pigmented forms. Vreeland (1986: 365) notes the six principal colours – white, sand/tan, dune/brown, dark brown, reddish brown and steel grey – for which there are North Coast and highland terms. The

most frequently occurring dyes in the sample used with cotton are those of indigo, green and an orange/pink colour which Rowe (1984: 19) suggests may have been produced using either relbunium, a madder-related plant or cochineal. Brown cottons were indexed as natural colours in the absence of technical analysis, but Rowe (1984: 19) notes that browns may have been darkened using a plant dye containing tannin.

The range of dyed colours present in the camelid fibre yarns of the sample is much greater than those for cotton, probably owing in part to the fact that camelid absorbs dyestuffs better than cotton producing colours of more intensity and so was favoured for patterning. Comparison of colour values and the range of shades for cotton and camelid fibre yarns used to create different images is instructive in allowing an assessment of the extent to which yarns are standardised. It has been previously observed that while cotton yarns are considerably varied in terms of spin and fineness, both in cloths of different types and within the same type, camelid yarns found on the North Coast are highly consistent in the spin, ply and degree of twist (Rowe 1980: 86). With regard to colour, Rowe noted that in the textiles from Las Avispas burial platform upon which her study was based, the range present in camelid yarns was rather restricted – mainly red, golden yellow and golden brown (1980: 86). A detailed analysis of colour standardisation in the study sample would require close observation of variation within colour categories as in the work which Anne Paul undertook with 95 Paracas Necropolis garments (1990). She found that while the total number of colour categories (241) was average for what can be achieved with natural colourants, the variation within each category was narrow

suggesting that dyers confined themselves to customary recipes rather than experimenting with techniques (1990: 10). While differential fading in the current sample makes such an endeavor problematic for this study, some comments can be made on the range and frequency of colours of cotton and camelid fibre used to create different images. This will allow an assessment of the association of certain colours with each other and with particular types of imagery, and of how specific colour combinations may have functioned.

5.2 Colour palette and imagery

Colour values are higher for camelid fibre than for cotton yarns, reflecting the greater range of dyes applied to camelid fibre in Pre-Columbian textiles. The average colour values for cotton (indexing the number of different colours) are relatively consistent across image categories with Plain Crescent Headdress figures and birds showing the highest maximum values (see Chart 5.1).

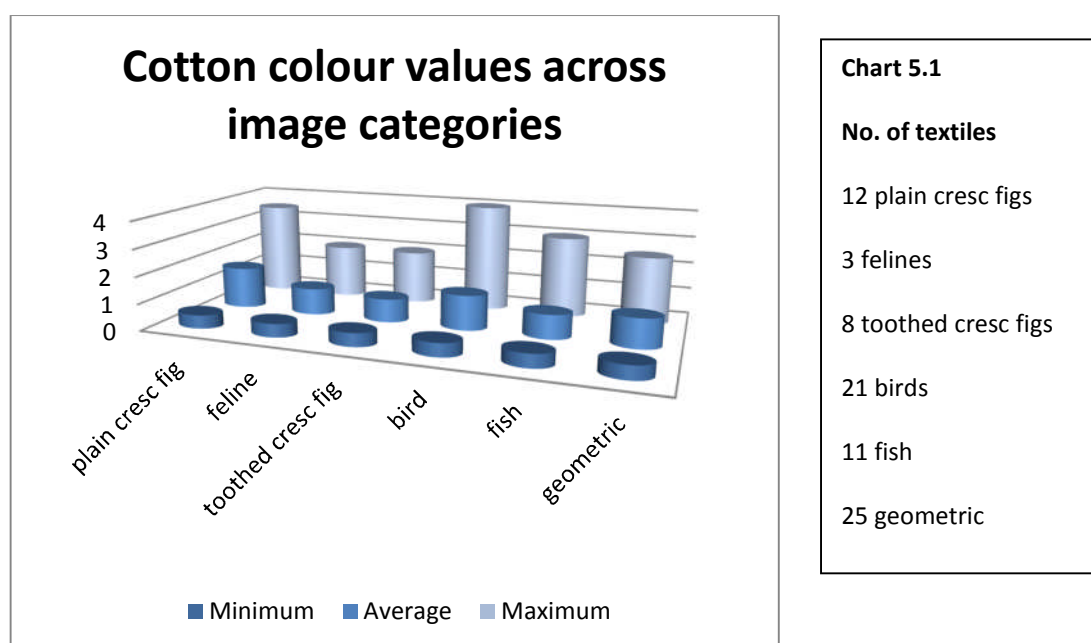


Chart 5.1: colour values for cotton yarns in Chimú imagery.

Colour values for camelid fibre however are less uniform for different image types, with felines and Toothed Crescent Headdress (TCH) figures featuring average values of 3.5 and 4.8 respectively (in comparison to 2.61 for Plain Crescent Headdress figures and 1.75 for fish). To an extent this reflects the higher camelid fibre content found in textiles featuring felines and TCH figures (see Chart 5.2) which are images particularly associated with the structure of tapestry both in the study sample and in published material (e.g. see Rowe 1984, 1999). These two types of image are therefore associated with a greater diversity of colours as the higher colour values show.

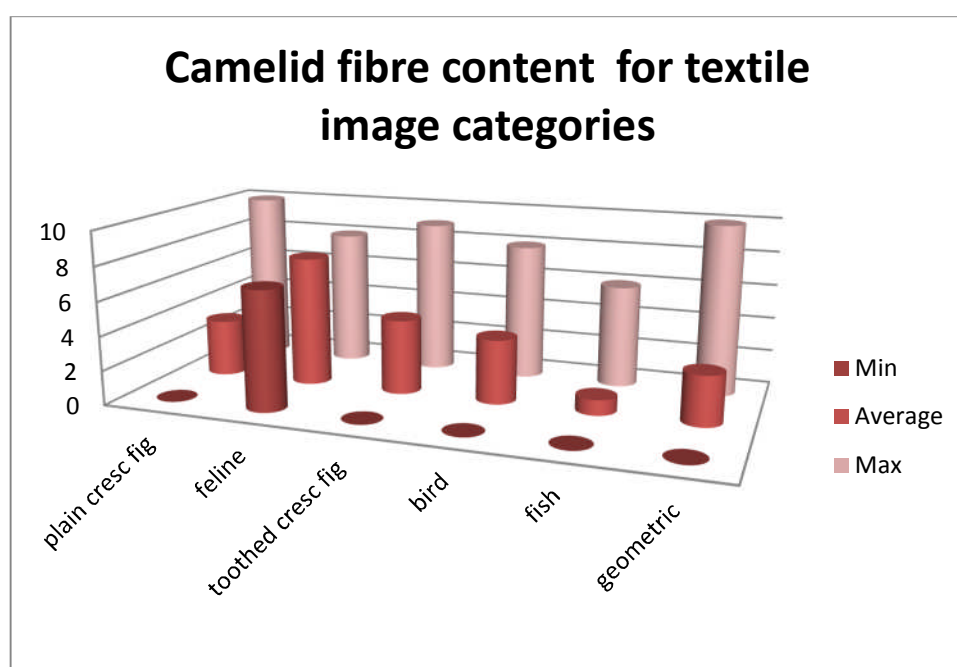


Chart 5.2 Amount of camelid fibre used with imagery types; sample numbers as for Chart 5.1

A survey of the full range of colours in the different image categories of the sample and their frequency of occurrence indicates that red is consistently the most commonly appearing colour (dyed or natural) in textiles using camelid fibre. Tan, brown, pink and indigo have the next highest frequency in camelid fibre cloth. As

mentioned above the range of colours found in camelid fibre is higher than for cloth made using cotton, but the diversity varies with imagery. An initial overview of the categorised textiles (i.e. 12 PCH figures, 8 TCH figures, 21 birds and 25 geometric) suggests that the range of camelid fibre colours is broader in textiles featuring bird and geometric imagery than for those with crescent headdress figures (Charts 5.3a-d below).

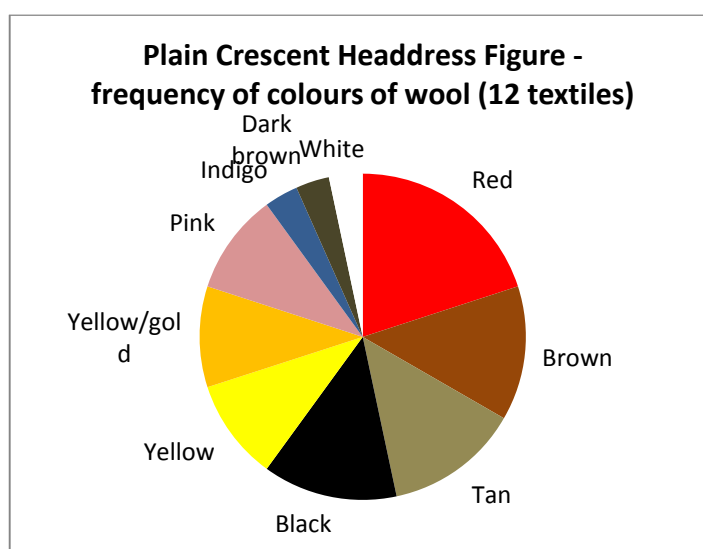


Chart 5.3a: colour frequencies in PCH figure cloth.

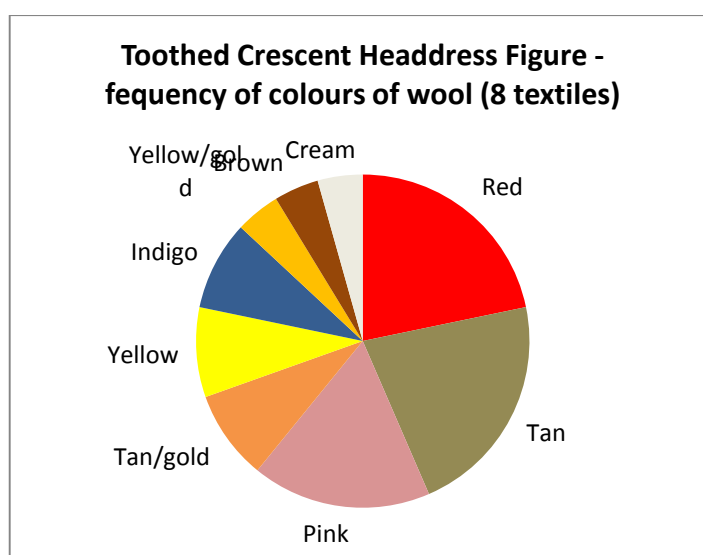


Chart 5.3b (above): colour frequencies in TCH figure cloth.

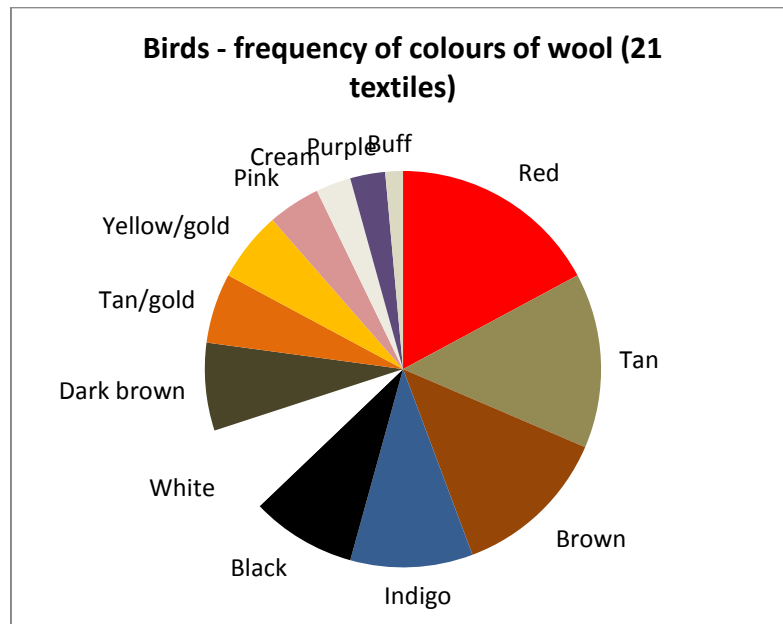


Chart 5.3c (above): colour frequencies in bird imagery.

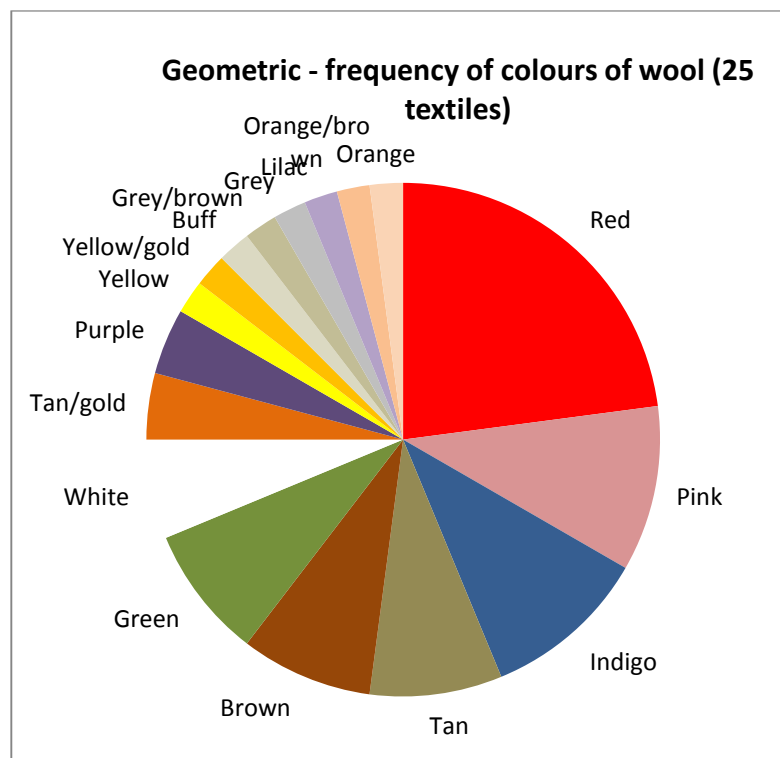


Chart 5.3d (above): colour frequencies in geometric cloth.

Indigo and white have the highest frequency in cotton cloth with the range in colours more consistent across image categories than is the case with camelid fibre. For detailed analysis of equal numbers of examples of imagery, 8 pieces were selected from each category – i.e. all the TCH figures, the first 8 PCH figures and

then 8 bird and geometric examples covering the range of motif types in these categories.

As was noted for the fuller sample which includes more bird and geometric imagery than PCH and TCH figures, with equal numbers of examples of image types there are still more colours of camelid fibre present in bird and geometric pieces (11 and 12 respectively) than are used to create PCH and TCH figures (9 each). Table 5.1 summarises the results for eight examples of each type of imagery. The dominant colours across all four categories are red, pink, tan and brown. This continuum accounts for 63.16% and 65.22% of colour counts in cloth featuring PCH and TCH figures respectively; for both bird and geometric imagery 50% of colour counts consist of red, pink, tan and brown together. In the sample of eight textiles for each image category red counts are relatively consistent for PCH (20%) and TCH (17.24%) figures and for birds (23.08%) but are markedly lower for cloth featuring geometric designs where appearances of red only account for 9.52% of the total colours recorded. The geometric textiles are the only ones in which pink rather than red, is the most frequently appearing colour (accounting for 19.05% of the total colours).

Imagery	No. of camelid fibre colours	No. of cotton colours	Red as % of colour counts	Red-pink-tan-brown as % of colour counts
PCH fig.	9	8	20	63.16
TCH fig.	9	6	17.24	65.22
Birds	11	9	23.08	50
Geometric	12	6	9.52	50

Table 5.1 Summary of colour distribution for 8 textiles of each type.

While the red counts (i.e. number of appearances of red in the sample) are very close for textiles bearing TCH and PCH figure imagery, the way in which red yarn are used is rather different for these two image types. Red camelid fibre yarns (whether dyed using cochineal – which is more likely, on account of the strong hues – or relbunium) have a strongly defined role in the aesthetic effects of the textiles of the Late Intermediate North Coast, appearing in consistent contexts on garments. For example, where a plain cotton ground cloth features supplementary weft patterning, this is very often executed using only red yarn (e.g. U-01131; R-0695). The weft-faced fringing often attached to Chimú textiles of various types is most commonly made using red camelid fibre yarns (e.g. U-01125b; 1954,05.618), as are the elaborate tassels which edge – or in some cases completely cover – textiles (e.g. 1907,3-19.83; 1978,1.8). See Figs.5.1a-c below.



Figs. 5.1a-c (left to right: R-0695 Museo Amano L:24.5cm, W:35cm; 1954,05.618 British Museum L: 156cm, W: 9cm incl. fringe; 1978,1.8 British Museum L: 84.5cm, W: 9cm incl. tassels)

Comparing the role of red yarns in the creation of TCH and PCH figure imagery is instructive. In general red is used much more extensively in cloth bearing TCH

figures (those assumed to be Chimú prior to Inka influence) where it frequently acts as a backdrop to imagery (e.g. 1896,509; 1954,05.596 Fig.5.2 and see Rowe 1984: pls.8 and 11). This is a particularly lavish use of red yarn which in other cloths tends to be used as economically as possible, in one of several supplementary weave structures in which the camelid fibre appears almost entirely on the front face of the textile (Rowe 1984, e.g.38). TCH figures seem also, based on published material and the data-set, to be most frequently rendered in tapestry which requires much greater amounts of yarn than do the supplementary techniques commonly used for PCH figures. The latter imagery tends to appear most often as large-scale, rather coarsely-woven figures done with supplementary wefts (see Fig.5.3). These textiles are often entirely made using cotton and where camelid fibre is used for the patterning it tends to be in shades of tan and brown. Red camelid fibre yarn appears only minimally (e.g. 1907,3-19.24; 1907,3-19.60). PCH figures were also executed using the tapestry technique but in comparison to the TCH imagery, red yarns are used less extensively, with backgrounds for example being more commonly formed of tan or brown yarns.



Fig.5.2 (left)
1954,05.596 British
Museum, L:24cm+16cm
strap, W: 29.5cm, the
Moon Animal

Fig.5.3 (right) 1919,11-
19.16 British Museum,
L: 80cm, W; 63cm incl.
fringe, PCH figure



Yellow and yellow-gold camelid fibre yarns however appear most frequently in textiles bearing PCH figure imagery (see Chart 5.4). 15% of colours counted are yellow or yellow-gold in comparison to, for example, cloth featuring bird imagery where these colours account for only 3.85% of the total colour count. Boytner (2006: 48) notes the difficulty in identifying the specific plant sources used to make yellow dyes but more recently positive results have been obtained using high-performance liquid chromatography with diode array and mass spectrometric detection. Zhang *et al* (2007) analysed a group of Late Intermediate Period textiles from the North Coast focusing on the yellow dyes present; they recognised four different dye types and managed to identify one as being from the plant *Flaveria haumanii* or a close relative.

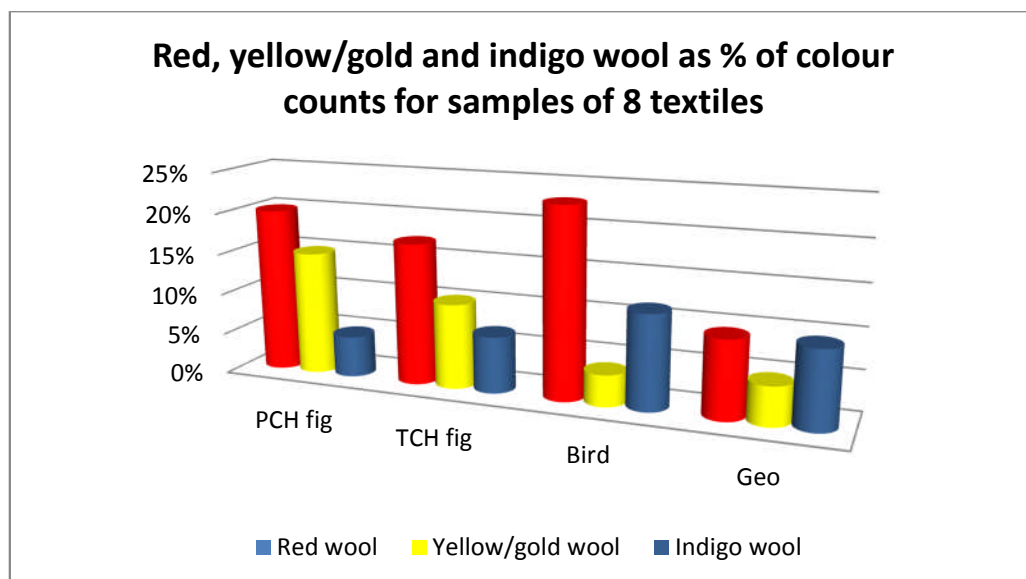


Chart 5.4: frequencies of red, yellow/gold and indigo camelid fibre across image categories.

Given the standardisation of alpaca yarns both in excavated material from Chan Chan and in North and Central coastal textiles, and the fact that these are identical to Wari and Inka tapestry fibres, Rowe (1980: 87) suggested that camelid fibre was not only imported from the highlands but was spun and dyed there on an industrial scale under central control. A highland source for the red and yellow dyes used in Chimú cloth does seem plausible. There are no instances of red or yellow cotton yarns in the study sample although Boytner (2006) did find low levels of red and yellow cotton yarns in the Pacatnamú material. He also found that while 70% of red camelid yarns were dyed with cochineal, 80% of the red cotton yarns were dyed using annatto (2006: 59).

The only dye to occur in both cotton and camelid fibre in the study sample is that of indigo. It has a relatively minor presence in camelid fibre yarns, ranging from 5% of the colour count for PCH figures to 11.54% of the count for bird imagery. However more striking contrasts emerge from analysis of the distribution of indigo cotton yarns (see Chart 5.5).

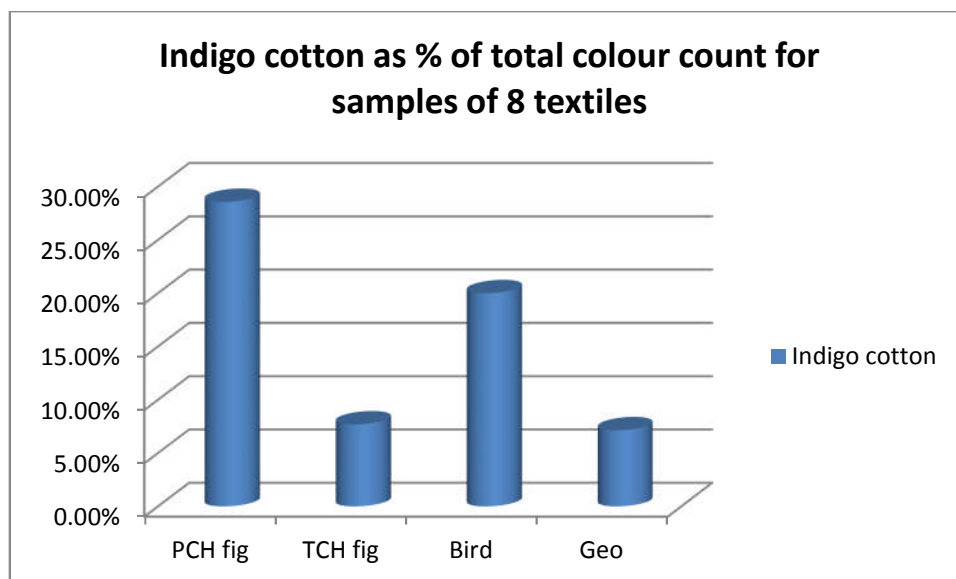


Chart 5.5: frequency of indigo colouring across image categories.

28.57% of the colour counts for PCH figures rendered in cotton are of indigo, in comparison to 7.69% for TCH figure imagery. Indigo appears in the form of several shades - dark and light - and was also probably used to create the colours of green and purple. The green samples analysed by Boytner (2006: 49) all showed evidence of blue indigo combined with an unidentified dye. Green appears in the study sample as an eccentric colour (i.e. a single count) of cotton in a PCH figure, but Rowe (1984: 128-129) illustrates several very similar examples of this imagery using green and indigo such that it was probably a standard combination. Green camelid yarn appears more frequently in the study sample in cloth bearing geometric imagery. Indigo can also be mixed with red to produce a purple dye, which can then be diluted to give pink (Boytner 2006: 52). At this point I would like to suggest the concept of colour 'ontologies' to refer to the inter-relatedness of dyestuff effects and their primary or secondary nature. Based upon this it follows that certain colour schemes would become favoured owing to the accessibility of specific colourants – or equally, to the restriction of others. It can thus be

suggested that the signature colour palette (natural browns, indigo, green and yellow) associated with the cotton, and used in coarsely-executed supplementary weft versions of the PCH figures which become so prevalent during the Inka occupation period, developed in part around a demise in the previous access to red dyestuffs and yarns. Boytner's (2006) study showed how closely red (and particularly cochineal) was associated with camelid fibre, and elite textiles rather than cloth from the lowest social tier at Pacatnamú. As mentioned above, red yarns are present in fine tapestry versions of the PCH figure but are used much more in TCH figure imagery. Rowe (1984: 32) suggested that the latter type of figure is associated with the period immediately before Inka conquest, a theory which she notes is supported by the material excavated by Topic at Chan Chan all being of the TCH style. It certainly seems a reasonable argument that a colour scheme such as the brown-white-indigo one developed completely outwith state (Chimú or Inka) auspices, while the presence of green and yellow camelid fibre yarns required some elite input. Yellow (camelid fibre) yarns were state-distributed, and the green-coloured yarn would have derived from dyeing these with indigo. The red-pink-tan-yellow continuum found in fine camelid fibre cloth represents a colour scheme running in parallel to the brown-white-indigo-yellow-green cotton-associated one and represents the multifaceted nature of the Chimú cloth production system. It will be argued further below that Inka reorganisation of Chimú craft production promoted the use of these polarised colour schemes, and that this colour classification extended to other media.

5.4 The use of 'eccentric' colours

One way in which to address the extent to which standardisation and control interacted with experimentation in colour production is to look at the distribution of 'eccentric' colours – i.e. colours which appear only once in the sample. A similar approach has been taken previously with the study of Middle Horizon Wari tapestry tunics (Stone 1986; Stone-Miller 1994). Stone-Miller analysed the distribution of what she referred to as 'anomalies' – irregularities such as the introduction of an unprecedented colour into an otherwise regular colour pattern. In Wari tunics she found that two-thirds of all intrusive colour anomalies are in the green-blue range (Stone-Miller 1994: 40). Several examples of blue-green colour anomalies in Chimú textiles are published in Stone-Miller's (1994) volume – plates 40 and 60a. As with the Middle Horizon examples, the Chimú instances occur in fine tapestry pieces and given the number of weft passes required to create each tiny shape, must have been intentional. Stone-Miller (1994: 40, 131) discusses the colour intrusions in terms of artistic creativity and formal dynamism counter-acting in some way, otherwise stable design compositions. She attributes the consistent use of blue-green for anomalies to the likely prestige and status conferred by the inclusion of a hue which is notoriously unpredictable. While this may apply to Chimú-period cloth, I contend that by the Inka occupation indigo had become part of a particular colour scheme which was not associated with elite textiles. One of Stone-Miller's illustrated Chimú tapestries with anomalies is of the PCH figure style, dating to the Inka period; here I consider that the inclusion of an indigo element is a reference to the highland tradition in the same way that Chimú-Inka cloth often features

highland traits such as interlocked tapestry wefts (rather than slit) or bi-colour warps.

Anne Paul's (1990) study of the garments of three Paracas Necropolis mummy bundles used the distribution of eccentric, one-of-a-kind colours to consider the organisation of dyeing. Among the 240 colours she identified, 20 stand out from the others in their intensities – a scarlet red for example, is particularly striking in comparison to the other relatively dull reds. She found that all but one of these colours occur in a single mummy bundle leading her to suggest that a dyer or dyers were affiliated with one individual, dyeing yarns to order for that person rather than working 'free-lance' (1990: 12).

Paul's study was based upon the concept of the 'colour block' – the specific colour configuration of the constituent parts of an iconographic unit (2000: 113). Such an approach is not compatible with the sample used in the present study because it requires more complete textiles with repeated imagery. However it does not seem that the concept of the colour block as a means of ordering colour patterning applies to Chimú cloth to the extent that it does to Paracas or Wari. This is partly due to the fact that textiles are assembled of constituent sections such that the design is executed separately in several steps and probably by different workers. Paul's previous work (Paul and Niles 1985) identified the hands of seven Paracas embroiderers at work on one mantle with seventeen workers collaborating on another, but this would have involved close spatial cooperation whereas one feature of Chimú textile production is that garments are composed of completely separate components. While it would have been possible for textiles to be

assembled such that colour patterning on the diagonal for example, was maintained across the width of a cloth through close collaboration between workers, this does not seem to have been a priority. This study does show however, that there was a concern on the part of Chimú patrons or design planners to affiliate certain iconographic figures with specific colour schemes.

In order to assess the extent to which colour schemes are defined for different imagery, the distribution of one-of-a-kind colours across the sample was analysed. These eccentric colours were classed as those appearing only once in a given image category. As noted above, in camelid fibre the red-pink-tan-brown continuum accounts for higher percentages of the total colour counts in the PCH and TCH figure categories than it does in textiles featuring bird and geometric imagery. The colour palettes of these latter two categories include greater numbers of eccentric colours (see Chart 5.6). In the sample of eight textiles of the four image categories, there are seven one-of-a-kind colours of camelid fibre yarn in the geometric group, five in the bird group and three each in the PCH figure and TCH figure group. In the PCH figure group the eccentric colours of camelid fibre yarn are dark brown, yellow and indigo – among those colours which I argue are strongly associated with the coarser cotton versions of PCH figures. The one-off camelid fibre colours in the geometric category include two rather rare shades which are not associated at all with PCH or TCH figures – a lilac and orange-brown. Orange and orange-brown occur once each in cotton yarns of cloth featuring bird imagery, and lilac occurs nowhere else at all in the sample, either in cotton or camelid fibre. Stone-Miller (1994: 126) points out that purple shades are shorter-lived so differential

preservation may be a contributing factor here. As mentioned above one way to obtain purple is to mix indigo and red dyes, or alternatively it has been suggested that shellfish may have been the direct source of purple dyestuffs (e.g. Michel *et al.* 1992). Purples do seem to be among the rarest shades in the textiles of the Late Intermediate Period North (and Central) Coasts. Given that it is possible to dilute purple dye to give pink (Boytner 2006: 52) one might expect that these colours would occur more frequently together, but this is not the case. Pink numbers among the highest (camelid fibre) colour counts in the sample together with red and tan, which supports my contention of a colour scheme developing around access to red dyes given that red dyes such as relbunium and cochineal can also be used to produce pinks (Rowe 1984: 19).

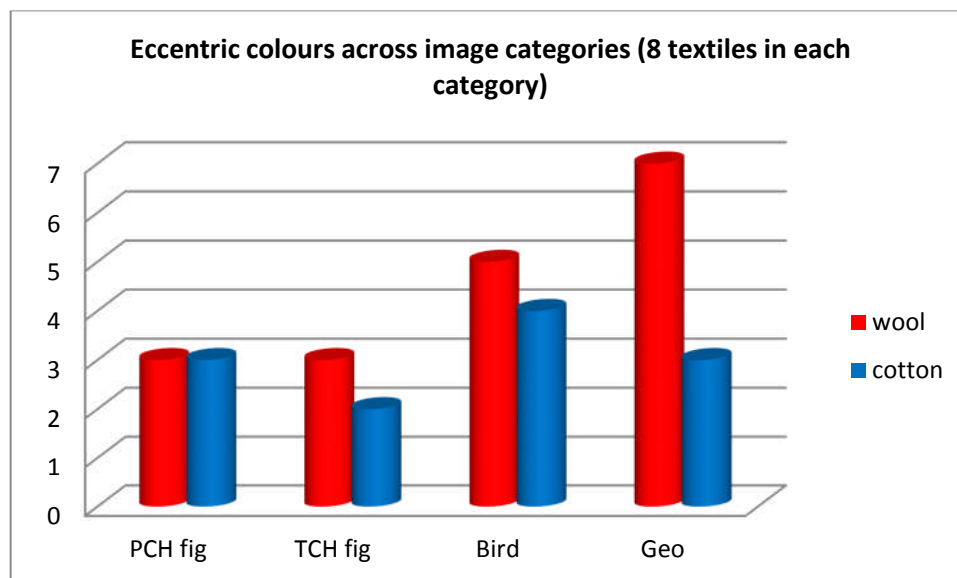


Chart 5.6: distribution of eccentric colours in Chimú imagery.

In cotton yarns there is less of a contrast among the iconographic categories with four eccentric colours present in the bird group, three in the geometric and PCH figure groups and two in the TCH figure group. This partly reflects the fact that

there is less diversity in the range of colours appearing in cotton in relation to those associated with camelid fibre.

On the whole the colour data is supportive of the contention that distinct colour schemes operated in association with specific imagery. There is a contrast between what might be thought of as politically-charged iconography – the PCH and TCH figures – and imagery consisting of bird and geometric motifs. The cloth bearing PCH and TCH figures features fewer colours comprising a larger proportion of the total colour counts (i.e. the red-pink-tan-yellow continuum in camelid fibre), with a division between these two type of figures evident in the extent of usage of red yarns across the corpus of Chimú textiles. These two categories of cloth are also associated with lower numbers of eccentric colours than are the bird and geometric varieties. This suggests that TCH and PCH figure textiles were more standardised in their usage of colour than were the other types of imagery.

Particularly marked in the cotton colour data is the very high indigo counts for the PCH figures, compared with TCH figures as well as bird and geometric pieces. While indigo camelid fibre anomalies are present in published examples of fine Chimú tapestry work as discussed above, it is argued that by the Inka period indigo had become the main colour characterising a scheme associated with coarser, standardised versions of the PCH figure.

The following section discusses how technique – and particularly the use of warp- and weft-based methods – relates to image categories and the colour data.

5.5 The Chimú technical suite

Chimú textiles are most commonly based around plain weave structures. Whether they are completely plain, as in many of the pieces examined from Huaca Tacaynamo, or feature warp stripes, bands with plain-weave-derived float weave, weft-faced stripes or supplementary weft patterning all are based around the principle of regular 1/1 interlacing. Conklin's (1979) study explored the patterning possibilities exploited by Moche weavers within the broad class of plain weave textiles including the use of several types of supplementary weft patterning (one on warp floats), slit tapestry and weft-wrapping. Some of these structures persist in Chimú weaving but one significant departure is that of twill structures. These characterise a large number of provenanced Moche III to V textiles (see Conklin and Versteylen 1978; Donnan 1973; Donnan and Donnan 1997; Prumers 1995; Rodman and Lopez 2005), but apparently cease to appear in Chimú weaving. Twill had been a component of the North Coast technical suite since the Initial Period. Conklin (1975b: 82 cited in Doyon-Bernard 1990:73) studied two samples from the site of Pampa Gramalote which are the earliest known examples of twill construction on the Peruvian coast. Twill differs from the regular 1/1 interlacing of plain weave in that 'each weft must pass over or under at least two warps and under or over one warp' (King 1965: 176), creating short two-span floats in diagonal progression.

The decorative possibilities obtained with plain weave constructions are provided through manipulations of the weft whether in discontinuous fashion or with the addition of supplementary elements. Tapestry, a mainstay of fine Chimú weaving retains the regular interlacing of plain weave but each weft turns back on

itself within design areas rather than travelling across the full width of cloth. Unlike balanced plain weave, wefts are compacted to conceal the warps to give solid areas of weft colour. Some examples of Chimú tapestry feature what is known as 'eccentric' wefts, where design yarns move in a curvilinear manner rather than conforming to strict horizontal alignment (Fig.5.4 below).



Fig.5.4 (above) IV-2.1-0939 Museo de Arte, Lima: tapestry with eccentric wefts, L: c.15cm, W: c.6cm.

Closely related to tapestry is the structure of discontinuous warp and weft (DWW). Whereas in tapestry the weft alone carries the design and warps are plain and continuous throughout the length of a fabric, in DWW cloth warps also reverse turning back at the areas of colour changes such that warps and wefts both simultaneously produce the design. Such warp interruption does not represent a specific weaving technique but is a special system of warp construction (Strelow 1996: 133). While patterning in balanced plain weave is restricted to stripes or plaids the DWW method, although based upon plain weave, allows the production of far more complex structural patterns. It first appears in the archaeological record on the South Coast in versions constructed using camelid fibre and as Rehl (2006: 31 citing Rehl 2003) points out, it is an economical use of this precious

material consuming only one-third to two-thirds the amount of camelid fibre of tapestry. On the North Coast however, cotton was favoured for DWW cloth and the colour palette for Chimú versions is subdued – shades of brown, white and indigo - in comparison to the vibrant camelid fibre of Paracas and Nasca examples (Fig.5.5 below).



**Fig.5.5 (above left) U-01126,
MA de la UNT, L: c.50cm, W:
c.200cm. Fig.5.6 (above right)
U-00068, MA de la UNT, L:
c.250cm, W: c.150cm**

Also deriving from plain weave are various simple float-weave structures characterised by alternation in the alignment of floats (Emery 1966: 113). Such alternating float weaves are particularly evident in the material examined from Huacas Partida and Cao Viejo at El Brujo (Fig.5.6 above). Emery remarks that all other float weaves tend to be classed as deriving from twill, but that in many alternating weaves there is enough structural relationship to plain weave to suggest classification as plain weave-derived (1966: 113). It may be though that the El Brujo float weaves evidence some continuity of Moche twill structures.

Plain weave structures can be compounded by adding sets of elements (Emery 1966) as in supplementary weft patterning, a method extensively exploited in Chimú weaving in various forms. Rowe (1980: 90-92) identified three types of such patterning in the textiles she analysed from Las Avispas burial platform at Chan Chan.

As noted above, the design potentials of plain weave constructions are realised by means of manipulating the wefts. Initially during the Early Horizon warp patterning was limited to vertical stripes or the cumbersome addition of contrasting fibre to sections of warp (Doyon-Bernard 1990: 74). The earliest evidence of warp-patterned designs formed from continuous warps in several colours comes from the site of Cerrillos in the Ica Valley (Wallace 1979: 44). Such a complementary warp weave involves two sets of elements which 'are co-equal in the fabric structure' (Emery 1966: 150). It is not a structure particularly characteristic of Chimú weaving, but a close relative – double cloth – is one of the structures which Rowe (1984) includes in her early Chimú Bird Lot stylistic category. In double cloth both sets of complementary warps are woven simultaneously with two separate shots of the weft producing two separate webs of cloth (Doyon-Bernard 1990: 81). Yarns exchange positions on their respective sides of the fabric such that colours reverse – the ground of one face forms the design elements of the reverse and vice versa.

5.6 Assembling Chimú textiles – a 'production line' construction?

Chimú craft production as an 'art of assembly' is nowhere more apparent than in the manufacture of garments. On the Peruvian North Coast during the Late Intermediate Period, the need to wrap human bodies in cloth prompted technological developments

which contrast strongly with the highland traditions. Something akin to the concept of tailoring arose on the coast, finding solutions to making cloth fit more closely around the body in opposition to the draped fit evident in womens' garments in the highlands. The Chimú approach to the wrapping of bodies resulted in garments which are highly 'assembled' – multiple components are joined together contrasting strongly with Inka and Tiwanaku tunics, which consist of single textiles folded in half and seamed down the sides. Chimú tunics feature sleeves of several pieces, numerous added panels, fringes and pendants; garments are highly reticulate and movement is a strong aspect of their effect. Cloth is often light and flexible – fine open weaves and gauzes, discontinuous warp and weft; where tapestry is used it is often in the form of panels applied to a separate ground cloth. Its slit nature though (as opposed to the interlocked highland version) gives it more movement and flexibility than the dense highland weaves. (See Kuchler 2007: 135-136 for a discussion of the fabric qualities contributed by the techniques used in their manufacture).

The use of multiple layers in Chimú garments is also important. This takes several forms, including for example the use of backing cloths sewn to the reverse of the outer textile as lining. Alternatively sheets of raw cotton are placed between woven layers to form padded garments – thought to be specific to the Chimú tradition (Fig.5.7a-b below).



Fig.5.7a (above left) front 1954,05.593



Fig.5.7b (above right) back 1954,05.593

British Museum, L: 68.5cm, W: 54cm

These are usually hats or male tunics and though the function of the padding is uncertain, a military role is possible given the historical documentation of the role of textiles in Inka warfare. Supporting this contention is a Chimú-Inka tunic in the Staatliche Museen Berlin (V A 20313; Strelow 1996: 54-55), which recreates the classic Inka black and white chessboard military tunic. The Inka proto-type is a single layer of tapestry, but the Berlin version uses Chimú weaving technology – the DWW technique combined with raw cotton padding in between two layers of cloth. Thirdly the weave structure itself may be compound, consisting of two layers – two sets of warp and weft as in double cloth, or one set of warp and two sets of weft as in supplementary weft patterning. Various forms of the latter technique were developed in Chimú weaving but all involve the imagery being executed in a superficial layer, independent of the ground weave. Such ‘addition’ techniques contrast with more labour-intensive ‘incremental’ methods such as double-

cloth, warp-patterned weaves or tapestry where the design is very much a part of the ground cloth.

The next section discusses the evidence in the study sample for variation in the steps of iconographic emplacement within the operational chains of different textile techniques, and how this relates to the type of imagery being produced. This has implications for the extent to which Chimú (and subsequently Inka) patrons were able to supervise the production of iconography, and how they may have actively sought to promote the development of production sequences in textiles. Chapter Six then discusses in some depth the application of such principles of an 'assembly line' to other media employed in the production of Chimú crafts.

5.7 Figures of State – Toothed Crescent and Plain Crescent Headdress imagery

As previously mentioned these styles are thought to be temporally rather close, and there do occur in the study sample several pieces which are problematic in that there are good reasons for assigning them to either. One of these is R-1862 which I have classed as TCH on the grounds that the headdress, consisting of volutes, fits more with this than with the PCH category; however the heart-shaped manner in which the face is rendered relates closely to Inka-period feline imagery and to the PCH figures (Fig.5.8 below). The second piece is a padded hat (1954,05.596) featuring repetitions of the Moon Animal in what is clearly a toothed crescent headdress (see Fig.5.2). I thus assigned it accordingly, but the motif and colour scheme associate it very closely with a large panel illustrated by Rowe

(1984: pl15) in which the Animal wears a plain crescent headdress. Rowe however chose to assign this piece to the TCH style on the grounds that she knew of no other such large panels which fitted into the Inka-period style. These two examples support Rowe's contention that the TCH and PCH figure textiles were temporally close. The results of my study though suggest that there is enough distinction between the 'lines' of cloth which I identify for these two types of imagery to imply that there is some time gap rather than none.



Fig.5.8 (R-1862, Museo Amano): alternating float weave TCH figure.

Comparing the production step values for the pre-set/incremental, additional and assembly work going into textiles featuring TCH and PCH figures gives some striking results. Charts 5.7a-b show these values for the individual textiles in the sample. The eight TCH figures studied include three tapestry versions, two supplementary weft versions, two painted versions and one warp-patterned alternating float weave (R-1862 referred to in the preceding paragraph).

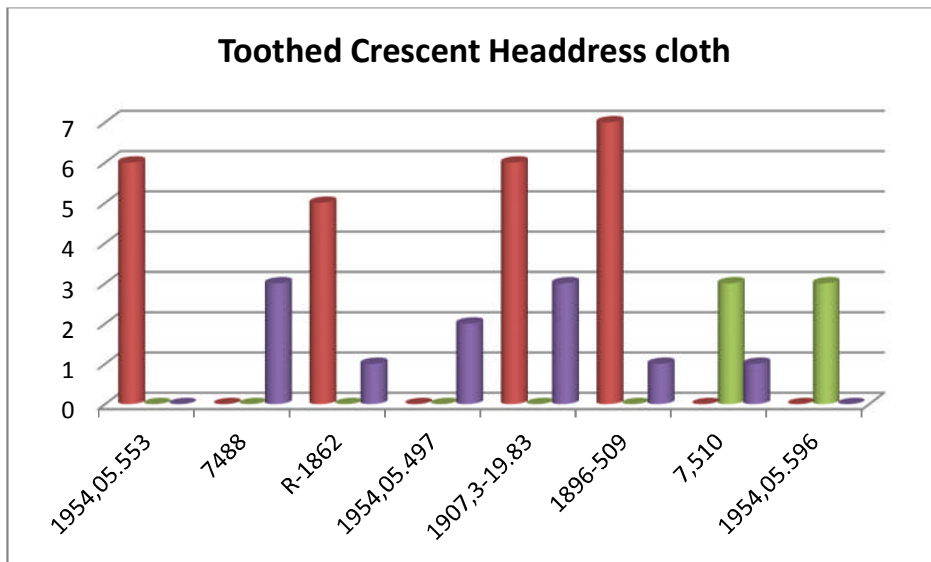


Chart 5.7a: labour values for TCH figure cloth

Pre-set/incremental work; additional work; assembly work

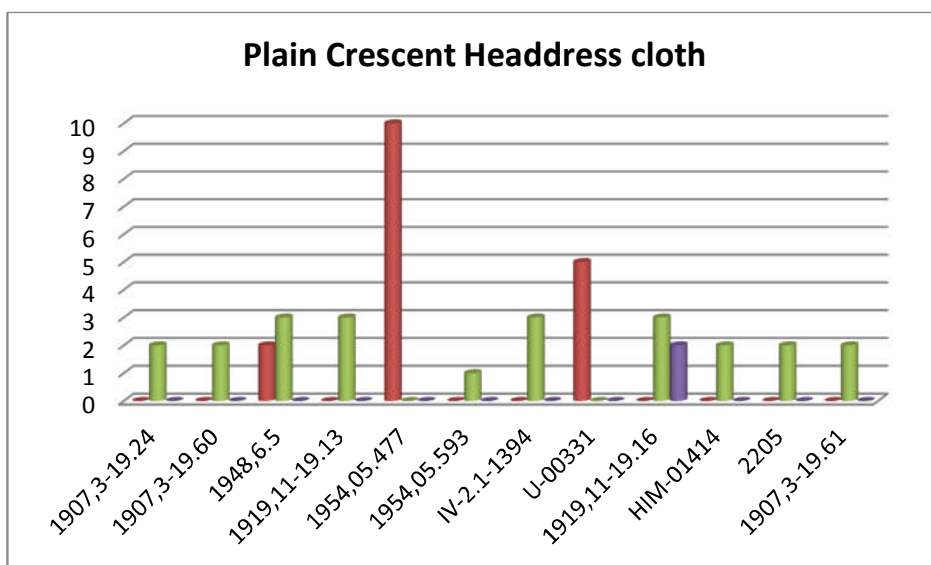


Chart 5.7b: labour values for PCH figure cloth

Pre-set/incremental work; additional work; assembly work

Thus the pre-set/incremental values (tapestry and the warp-patterning) cluster around the value of six, with the two pieces featuring supplementary weft patterning indexing

zero in these values and three in the additional work. However what is particularly interesting is that six out of the eight textiles feature assembly work – i.e. applied fringing, tassels or paint, or a combination of these. Piece 1896,509, a loincloth panel with a stepped outline, features the highest pre-set/incremental value on account of it being shaped tapestry but also involves assembly work in the form of fringing along the stepped edges. Piece 1907,3-19.83 the function of which is uncertain but may have been a decorative attachment for a headdress, is composed of multiple components (Fig.5.9 below). Each face consists of a central tapestry panel with three overlapping fringes; these two sides are seamed together around a core of cotton yarn; multiple tiered tassels feature along the top and bottom edges of the piece. Applied fringing also features on one of the supplementary weft pieces (+7510) and one painted version of the TCH figure (+7488).



Fig.5.9a and b (above) 1907,3-19.83 British Museum: bird wearing TC headdress; tapestry, L: 12.5cm not incl. tassels; W: 17cm.

Out of the twelve PCH figure textiles studied, ten are executed in supplementary weft, one is tapestry and one is done in a warp-patterned alternating float weave. Pre-set/incremental work values are thus mostly zero; one of the supplementary pieces (1948,6.5) has a value of two because it features warp stripes in the ground cloth (the ground cloth is indigo cotton, which is unusual in itself, natural pale brown being the more common choice for the ground weave of a textile featuring supplementary patterning). Piece 1954,05.477 is the only tapestry version of the PCH figure in the sample; its incremental work value is indexed especially highly (ten) owing to its being finely woven and to the fact that slits are closed by interlocking wefts rather than the more usual means of applied stitches (Fig.5.10 below left).



Fig.5.10 (left) 1954,05.477, British Museum
L:66cm; W:7cm. Fig.5.11a (below) 1948,6.5,
British Museum L: 16cm; W: 45cm



Most of the work going into design emplacement in cloth bearing PCH figures then, is indexed as additional with values falling between one and three depending upon the

extent of coverage. Three pieces (1948,6.5; 1919,11-19.13 and IV-2.1-1394 – Fig.5.11a-c) have the maximum value of three for additional work. These pieces are striking in that although they feature supplementary weft patterning over the entire surface of the cloth – i.e. background as well as figures are done with supplementary wefts – the ground cloth itself is coloured. 1948,6.5 features an indigo-dyed cotton ground with buff warp stripes, 1919,11-19.13 features a black camelid fibre ground cloth (which is rare in both colour and material) and IV-2.1-1394 features a green-dyed cotton ground cloth. With the exception of 1919,11-19.16, which has an indigo-dyed ground cloth (very much exposed, since the patterning consists of isolated figures) no other textile in the study sample features a coloured ground cloth with supplementary weft patterning. It seems particularly odd that the coloured ground should be combined with full camelid fibre coverage, but these pieces are fragments and it may be that they were only the decorative borders of a larger piece of plain coloured cloth.



Fig.5.11b 1919,11-19.13 British Museum, L: 16cm(+5cm detached piece), W: 38.5cm
Supplementary weft PCH figures



Fig.5.11c (above) IV-2.1-1394, Museo de Arte, Lima: PCH figures; supplementary weft weave.

The warp-patterning values for TCH and PCH figure textiles are comparably low, the TCH examples including only one warp-patterned textile in an alternating float weave (the above-mentioned R-1862, which seems to be transitional PCH/TCH) and the PCH group includes also one example of warp-patterned alternating float weave (U-00331). Weft patterning values are higher on average for textiles in the TCH figure category – 5 was obtained as an average for cloth showing weft patterning values of greater than 1 point, compared with 2.83 for the average value of weft patterning work going into cloth bearing PCH figures. This fits with the observation made above that TCH figures, based upon published material as well as the data-set, are rendered in tapestry more frequently than are PCH figures.

In comparison with the extensive assembly work documented in the TCH figure textiles, cloth bearing PCH figures is much more integrated. The additional work values are uniformly zero with the exception of piece 1919,11-19.16 which features a separately-made fringe sewn on. It seems that tassels, appliqués and also paint are simply much less

closely associated with this type of imagery. This has very strong implications for the production environment in which textiles of these two types were manufactured.

To sum up the production step data assessing the labour which goes into different stages of the manufacture of textiles bearing TCH and PCH figure imagery it can be said that toothed crescent figures were apparently preferentially executed 'incrementally', most often in tapestry. However at the other end of the production sequence the emphasis on 'assembling' textiles such as tassels, appliqués and paint was particularly marked. Plain crescent imagery on the other hand is strongly associated with 'additional' methods, most commonly resulting in one of several supplementary weft structures with varying extents of coverage of ground cloth. Assembly work on these textiles is seemingly rare. In both types of imagery the pattern-bearing element is consistently the weft rather than the warp, though as is discussed below there occurs a sub-set of cotton warp-patterned textiles which feature PCH or TCH motifs - interspersed with fish and birds rather than being themselves the primary figures.

5.8 Figurative imagery

Although fruits and vegetables form a significant component of ceramic iconography in this study (see Chapter Six) they are not represented on any of the textiles in the sample. It is worth noting at this point however the existence of a complete Chimú outfit consisting of shirt, loincloth and turban in the Museo Chileno de Arte Precolombino. The

loincloth features applied highly detailed, three-dimensional plants of various species (see Brugnoli *et al.* 1997).

The twenty one-strong sample of textiles featuring bird imagery includes seven tapestry pieces with incremental labour values clustering around six but reaching nine in several cases. Piece IV-2.1-0939 is finely woven with highly eccentric wefts and includes interlocked wefts on design verticals rather than leaving slits, which adds to the labour value (Fig.5.4). The eccentric wefts bend around curves rather than running in linear fashion, enhancing the design. It is highly likely that this piece, while being too fragmentary to assess the full imagery accurately, is of the Inka period because as well as the weft interlocking it also uses bi-colour warps – white and brown plied together. Both these features are associated with highland weaving (Rowe 1978: 7-8). The second textile with an anomalously high incremental labour value is R-1851, a long fringed band of again highly eccentric, fine, tapestry (Fig.5.12); it features a fringe along one edge of extended wefts – so this is indexed as an incremental feature rather than an applied one as was the case with the fringes on the TCH figure pieces discussed above. One particularly striking feature of this textile however, is that the warp runs perpendicularly to the design - a row of long-legged birds (flamingos?). Most other long bands, and indeed Andean textiles in general woven the long way on backstrap looms, feature motifs which are oriented along the warp (e.g. 1954,05.577; 1954,05.478; HT55) so in this case the design was woven sideways. This may well also suggest highland influence because the warp in Wari tapestries was oriented sideways in the finished product (Stone-Miller 1994: 38).



Fig.5.12 (above) R-1851: tapestry showing eccentric wefts; Museo Amano, Lima L: c.100cm, W: c.7cm

Pre-set/incremental labour values for cloth bearing bird imagery are comparable with those for TCH figures – labour values greater than zero average out at 6 for TCH figures and 5.73 for bird imagery.

The sample of design based around bird motifs includes ten examples of supplementary patterning of various types. HIM-01049 for example features isolated motifs of executed in supplementary wefts bordered by monochrome weft-faced stripes; R-1852 features bird motifs laid out within a diamond grid woven in a supplementary technique termed ‘reserve-line patterning’ (Fig.5.13). Rowe (1984: 57) describes how in this technique the supplementary weft float across the fabric front, being caught down at regular intervals beneath a warp/pair to form the design outline.



Fig.5.13 (above) R-1852: reserve line patterning; Museo Amano, Lima.

The frequency of assembly work in textiles with bird imagery is significantly lower than it was for TCH figures – in the latter category 75% of textiles featured applied tassels, fringing or paint while only 38.1% of bird imagery is associated with such applications. Three out of the seven bird tapestries studied involve assembly work as do four of the supplementary weft-patterned cloths.

Analysis of the labour values of cloth with fish motifs provides some marked contrasts with textiles with TCH, PCH and bird imagery. Firstly only three out of the eleven textiles in the sample feature pre-set/incremental labour values of more than zero, and only one of these (HT55 – Fig.5.14) is a tapestry. The other two are both warp-patterned alternating float weaves.



Fig.5.14 (above) HT55: tapestry; Huaca Tacaynamo.

Secondly, there is only one example of fish imagery executed in supplementary patterning (U-00347) meaning that the majority (63.64%) of fish imagery is created by assembly work. While 75% of TCH figures involved assembly work, the fish category is different because in this case the primary imagery is created via applications rather than being supplemented by them as with the TCH imagery. The technique used to create fish motifs appear to be restricted, both within the data-set and in published material, to this type of imagery. The method involves sewing plaques of shell or metal onto a plain cotton ground cloth, in rows and in two cases within a field shaped like a stepped triangle (IV-2.1-0078; IV-2.1-0038 – Fig.5.15a). These plaques are highly standardised in form; the shell versions can be pink, white or translucent and feature a small hole at either end of the fish to allow attachment by cotton yarns to the ground cloth. The eye is inlaid in the contrasting colour of shell and markings are inscribed on the fish torso in a prescribed manner. Fins are also consistently rendered with one along the spine and two along the underside. The metal versions match closely their shell counterparts in outline and internal markings (Fig.5.15b).



Fig.5.15a (above) IV-2.1-0078, Museo de Arte, Lima.



Fig.5.15b (above) IV-2.1-0068, Museo de Arte, Lima, motifs

are c. 2x3cm

It seems then that the most likely candidates for production-line textiles are those of the TCH figure type and those bearing fish imagery. Applied imagery can be made completely separately from the weaving of the ground cloth, which is not the case for imagery such as that in supplementary weave structures. Here although the production process is segmented with the patterning being woven in a different step to the ground, it is not temporally separated – the supplementary wefts would be woven along with the ground. Chapters Seven and Eight discuss the extent to which production steps in other media could be undertaken independently of one another and whether this might reflect a technological tradition or an imposed organisational feature.

5.9 Geometric imagery

The textiles with geometric designs feature the most diverse range of weave structures in the study sample including tapestry, double cloth, warp-patterning and discontinuous warp and weft. Pre-set/incremental labour values indexed run from two for simple warp striping to nine for the highly labour-intensive DWW textiles. The average for such work indexed at more than zero is 3.82 – rather lower than the figure of 6 obtained for TCH figures and that of 5.42 for bird imagery; this is mainly due to the fact that many of the textiles in this category feature simple warp stripes or plaid designs rather than complex motifs. However, the most complex weave structure in the study sample was associated with geometric imagery – DWW fabric. In principle this is something akin to tapestry weaving (as discussed above) but with the labour applied to creating the pattern being input in two stages. While tapestry requires the use of only plain warps – the weft being the pattern-bearing element – DWW involves the initial creation of the design by means of discontinuous warps which are added in horizontal weft position on temporary scaffold yarns. This is the same process as building up a tapestry using discontinuous wefts. The loom would then be rotated by ninety degrees such that the discontinuous warps were then in vertical warp position for the discontinuous wefts to be added (Rehl 2006: 26-27, based upon an unfinished DWW cloth of the Late Intermediate Period still on the loom or scaffold sticks, in the American Museum of Natural History, New York). The production of stepped imagery is naturally favoured with this technique owing to the preplanning of the scaffold weft spacing; curvilinear figures were achievable using DWW as is evident in the Paracas piece illustrated by Rehl (2006: fig.8) but countless numbers of scaffold wefts

would be required. I know of no examples of TCH or PCH figures being produced using DWW but this study will argue that the characteristic stepped imagery came to play an equally important, state-affiliated role in the Chimú visual system based upon its influence upon other media (discussed in depth in Chapter Seven).

Assembly work in the sample of geometric cloth is less of a feature than it is in the TCH figure pieces or those bearing fish motifs – 52% of geometric cloth involves applied visual features in comparison to 75% and 63.64% respectively. In most cases it supplements the primary imagery, as with both examples of DWW where separately-made fringes are sewn along the edges (Fig.5.16).



Fig.5.16 (above) U-01125b: DWW technique with added fringe, MA de la UNT.

5.10 Summary

To sum up the results of the textile data analysis the most significant contrasts are to be found when comparing the cloth bearing Toothed Crescent Headdress imagery with that featuring Plain Crescent Headdress figures. The late Chimú but pre Inka-conquest TCH cloth uses greater quantities of camelid fibre and with regard to colour, red is particularly

associated with this category. PCH textiles are preferentially executed in cotton and indigo is the most frequently occurring colour which may imply production by Chimú weavers whose supply of camelid fibre has been disrupted. The red-pink-tan-yellow continuum in camelid fibre is to be found near-equally in both categories (taking into account the fact that camelid fibre is more associated with TCH than PCH figures). In cotton, the colour scheme of brown-indigo-white with yellow camelid fibre marks the PCH imagery.

TCH textiles involve more pre-set/incremental work than do PCH ones, the latter being preferentially executed using additional supplementary methods; however TCH figures are associated with significant assembly work involving features such as tassels and fringing rarely found on PCH cloth.

Chapters Seven and Eight discuss these results, considering implications for production environments and relations with other media.

CHAPTER SIX: THE CERAMIC DATA

This chapter presents the analytical data for the ceramic sample. It begins by discussing previous work on Chimú iconography in different media and details the application of imagery classification schemes to this study. For each image category and following the production *chaîne opératoire* for mould made vessels it then presents the results of the application of the PSM to the study sample. This begins with an analysis of the pre-set mould-work going into different vessels – including mould orientation and the level of detail rendered by means of the mould – before looking at additional assembly work such as the application of modelled elements, and steps such as the use of paint and incisions, and finishing work. This data will be used to compare the labour invested in ceramics bearing what might be considered as politically or religiously-charged images (e.g. crescent headdress figures or the Moon Animal), versus vessels featuring scenes or motifs more likely related to daily activities (vegetables, canines, human depictions). It will show the extent to which the work invested in pre-set mould-made features varies with imagery and which types of figures are subject to the most post-mould additions and modifications. From this can be gained some idea of how artisans were able to ‘de-standardise’ vessels which may have derived from a set of stock forms and images. The use of matrixes and moulds in the fabrication process for vessels would make the establishment of a something akin to an ‘image bank’ very feasible – whereby artisans could select from various set forms, figures and motifs to create pottery. The extent to which such a pool of ‘trademark’ forms and designs might

be centrally controlled, and the mechanisms by which this could be achieved will be discussed in the context of specialisation in Chapters Seven and Eight. Whether artisans created their own matrixes and/or moulds or whether these items were 'state-issue', they did not completely determine the final form of a vessel. I identify significant variation in the degree to which the building up of imagery is segmented through the use of the matrix, the mould and stamping, particularly when comparing earlier Chimú vessels with those made under the Inka. This has implications for the organisation of production and artisanal roles in the creation of Chimú and Chimú-Inka canonical pottery. I also examine the role of post-mould steps – assembly work and the level of finishing- which allows an assessment of the degree of artistic 'freedom' in relation to the type of imagery being rendered.

6 Ceramic analysis

6.1 Horizontal and vertical mould use

The majority of vessels in the study sample assignable to the Chimú period (early/middle and late) are formed using vertical two-piece moulds; only 12 vessels out of a total of 130 use horizontal moulds (9.23% of the sample) and in three cases horizontal moulds are used in combination with vertical ones. Three of these fall in the categories of portrayals of Chimú deities or mythical scenes. Chart 6.1 shows the frequencies of horizontal mould use (as a percentage of the vessel total) across the different iconographic categories.

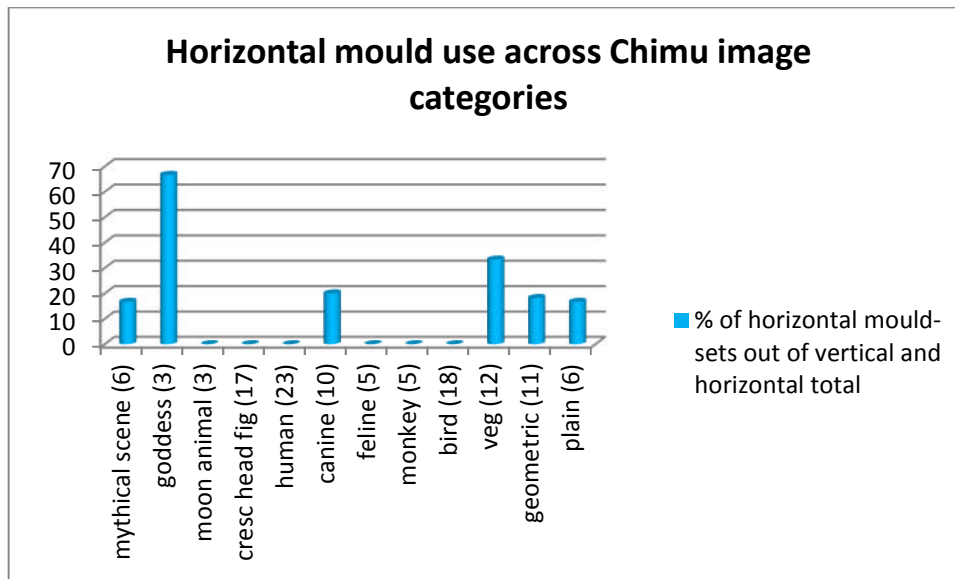


Chart 6.1 The distribution of horizontally-moulded imagery across Chimú vessels.

Two out of the three Chimú vessels depicting the goddess are created using a horizontal mould-set – as noted above, together with a vertical one which is also the case for the depiction of the maize deity in vessel 1954,05.89 (Fig.6.1 below). All three of these vessels are assignable to the Early/Middle Chimú period rather than the Late phase. This is perhaps to be expected because Collier’s (1955) work in the Virú Valley suggested that horizontal mould-sets were in use more frequently during the earlier Tomoval period (the local equivalent of the Moche-Chicama ‘Coast Tiahuanaco’ material (1955: 24)) than later in the Chimú and Chimú-Inka phases. The Virú Valley San Nicolas Moulded type of ware was found to be mostly produced using horizontal moulds while its blackware counterpart, San Juan Molded, was produced using both vertical and horizontal mould-sets (1955: 128-129). While both types of ware occur throughout the Tomoval, La Plata and Estero phases (equivalent to Chimú and Chimú-Inka periods), San Nicolas Moulded decreases in frequency from early to late while San Juan increases (1955: 109).



Fig.6.1(a) and (b) 1954,05.89 British Museum: maize deity constructed using horizontal and vertical moulds.

The Virú Tomoval period marked the introduction of the use of moulds to make domestic vessels. Both plain and decorated pots from refuse as well as graves were produced in moulds - in contrast to Moche pottery production which saw utilitarian vessels being handmade with moulding being reserved for mortuary vessels (Collier 1955: 111). However while moulding became applied to both utility and finewares from the Early Chimú period onwards, Collier notes a strong contrast in the construction methods of these types of ware with respect to mould orientation: while the polished and painted wares feature vertical joints, the utility vessels employed horizontal ones (1955: 127-129). The horizontally moulded Tomoval Virú vessels described by Collier, jars and *ollas* (both San Juan and San Nicolas types) feature a band of relief patterning on the upper half of the vessel, between the shoulder and neck or rim of for example, dots, diamonds or a row of small bird motifs (e.g. Collier 1955, fig.35 C and F; fig.36 B and I). Vessels formed in vertical moulds on the other hand, feature two relief panels of more elaborate patterning on opposite faces which extend from the neck nearly to the base, and

were more common in burials than the utility ware pots with simple relief bands (1955: 128-129).

An element of what might be thought of as technical determinism is likely to have had a role in the choice of creating horizontal bands of imagery with horizontal moulds, and vertical panels with vertical moulds in that these methods make no requirements on aligning imagery accurately across mould halves. (The vertically-made pieces characteristically feature panels of imagery separated by vertical raised bands, rather than having one continuous panel running around the chamber). However, it seems that in later periods (Late Chimú and Chimú-Inka) vertical moulds were used to create designs which in the earlier Tomoval phase would have been associated with horizontal mould-sets. For example three vessels in the study sample feature simple bands of stippled relief patterning on the upper half of the chamber, two together with strong vertical mould seams while the other is horizontally-made. The two vertically-moulded pieces include motifs of small birds (1921,10-27.225 and 1929,3-5.21), a feature which suggest Inka period production (the vessel forms – a bowl and jar with flaring spout – do not themselves indicate Inka affiliation). Two of the moulds Hayashida examined from Inka administrative centres on the North Coast at La Viña and Tambo Real featured stippling with small birds interspersed among the dots, a trait which does not appear on earlier vessels (1999: 344). Similarly, patterning on Inka-period stirrup spout bottles is often restricted to a single circumferential band on the upper part of the vessel (Scheele and Patterson 1966: 25) in contrast to the more expansive

design panels on earlier pieces. These vessels are created using vertical moulds but it seems that they may be referencing the earlier utility-associated tradition.



Fig.6.2 1921,10-27.225 British Museum, : bowl with small bird motifs dispersed amongst stipples.

As noted above, the two earlier vessels depicting the Chimú goddess in the study sample were created using both horizontal and vertical moulds. The horizontally-moulded chambers feature no relief patterning, though piece C-28619 bears painted bands; the figure of the goddess which surmounts the chamber was executed in both cases by means of a vertical mould-set with the limbs being hand modelled and applied. The later Chimú piece and the three Chimú-Inka examples of the goddess were all produced using vertical moulds only. An interesting vessel included by Martinez de la Torre in her catalogue of the Chimú collection in the Museo de America de Madrid (1987: fig.680) is a double-chambered piece which she assigns to the middle Chimú period. The front chamber is surmounted by the goddess and both chambers appear to have been made using horizontal moulds, oriented vertically – the patterning consists of a band running around the circumference of the chamber faces, divided into stippled and plain segments and

resembles the early patterning produced via horizontal moulds rather than the vertically-based panel designs characteristic of vertical mould use. These earlier depictions of the goddess then seem to mediate between the utilitarian and burial-appropriate wares which has implications for the accessibility of this particular Chimú deity to different sectors of the population. Moore and Mackey (2008: 800, after Mackey 2002) pointed out that the goddess is the only one of the deities to be represented solely in pottery and in three dimensions which suggests availability to all sectors of society. This can only have broadened with the change to creating goddess images in an all-inclusive manner in vertical mould-sets, without the need to produce the chamber separately or to hand-model and apply the limbs.

The second category of Chimú vessel in the study sample in which horizontal mould-sets most frequently appear is that of fruits and vegetables. 33% of vessels (four out of twelve) were created using such moulds, two of which are early/middle Chimú with the other two being assignable to the late Chimú period. Three depict the lucuma fruit in various quantities, with the fourth vessel representing a squash. The two later pieces (1929,3-5.15 and 1954,05.666) are both stirrup spout bottles, created using a combination of horizontal mould-set for the chamber and a vertical mould-set for the stirrup spout. It appears that following an absence during the Tomoval period in the Virú and local valleys (Collier 1955: 129) the stirrup spout form increased in frequency with the application of new production technologies based around the use of vertical moulds. Digby (1948: 607-608) outlines these methods which include forming the stirrup separately in a two-part vertical mould before either butting the ends onto the chamber, or inserting the stirrup ends

through holes in the chamber using collars. The alternative method used was to form the vessel in its entirety in a single two-part vertical mould.



Fig.6.3 1929,3-5.15 British Museum: stirrup spout bottle created using horizontal and vertical mould-sets.



Fig.6.4 1954,05.666 British Museum: stirrup spout bottle made with three mould-sets.

Collier's (1955) Virú material suggested that in the early phases of the Chimú period there were two distinct technological traditions with respect to ceramic production co-existing – one centred around the use of horizontal mould-sets and one employing vertical moulds. While horizontal moulds evidently were used much less in later Chimú times and under the Inka occupation (see next paragraph), they become associated with a particular suite of images, the form of which preferentially associates them with such an orientation of mould. These include depictions of creatures such as canines (e.g.1921,10-27.134, 1954,05.104, 1921,10-27.199) and deer in prone positions – the latter usually captive with rope binding the limbs (1947,10-28); shark-like creatures with tightly coiled bodies are also rendered in horizontal mould-sets (e.g. 1936,7-6.1).

The Inka period material of the study sample features only 6 instances of horizontal mould usage out of 131 vessels (4.58%), compared with 9.23% for the Chimú vessels discussed above. Four of the Chimú-Inka examples occur as imagery which has too low a frequency to be included in the categories analysed (shark, deer, shell and crescent); the other horizontally-moulded vessels portray fruits and vegetables but these number approximately half their Chimú counterparts for this category (14% in comparison to 33% are horizontally moulded). I will argue however in Chapters Seven and Eight that in the Inka period the early horizontal tradition is referenced in the organisation of designs on vessels.

6.2 Pre-set mould-work

This section discusses the labour values for the production steps involved in the ceramic depictions of the Chimú deities. It begins with the pre-set mould-work values for the vessels of the study sample, which account for the following features: a representational (i.e. sculptural as opposed to plain) chamber, the level of detail rendered via the mould (rather than modelled, incised or painted additions), the presence of stippling, lugs and stirrups with patterned sides.

Chart 6.2a (below) shows the production step values for the mould-work going into depictions of the different types of imagery shown on Chimú vessels. The 'mythical scene' type includes three examples of the anthropomorphic figure catching a fish monster (referred to above in association with its Moche prototype), one of a maize deity, one of a mythical figure with rayed headdress and a double-

headed rainbow serpent on the rear of the vessel chamber (BM Q82,871; the sixth piece is very similar to one published by Martinez de la Torre (1987: fig.688) and features the upper body of a frontal figure flanked by two smaller profile figures on one chamber, with what appears to be the lower body on the second chamber (BM 1921,10-27.111). The 'crescent headdress figure' category includes seventeen examples featuring headdresses of the various types identified above – *tumi*- like, with pointed or squared-off tips, internally marked or plain.

Most of the pre-set mould-work values cluster around 5 for these supernatural figures, with the goddess depictions being slightly more involved at 6.67 points, namely

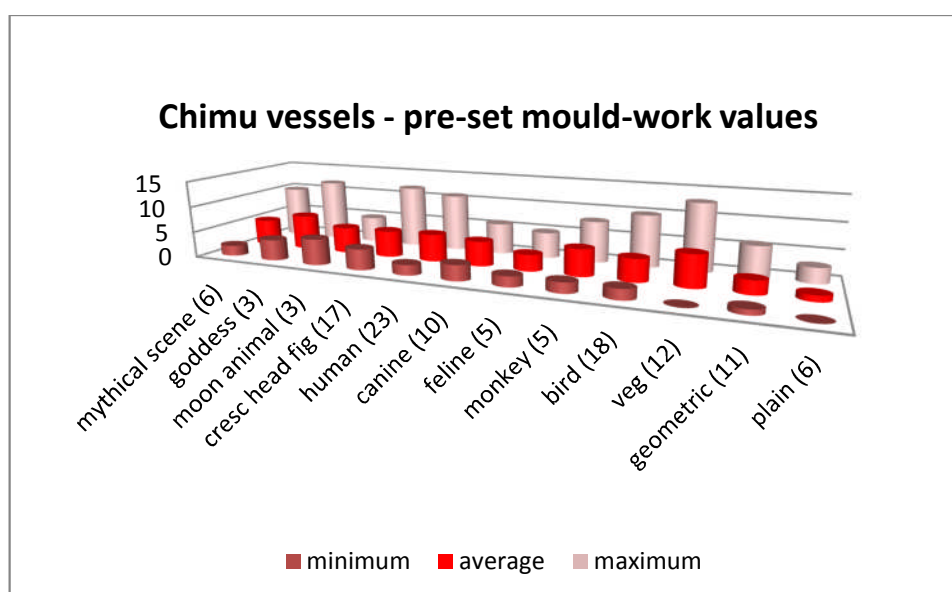


Chart 6.2a Pre-set mould-work values for Chimú vessels.

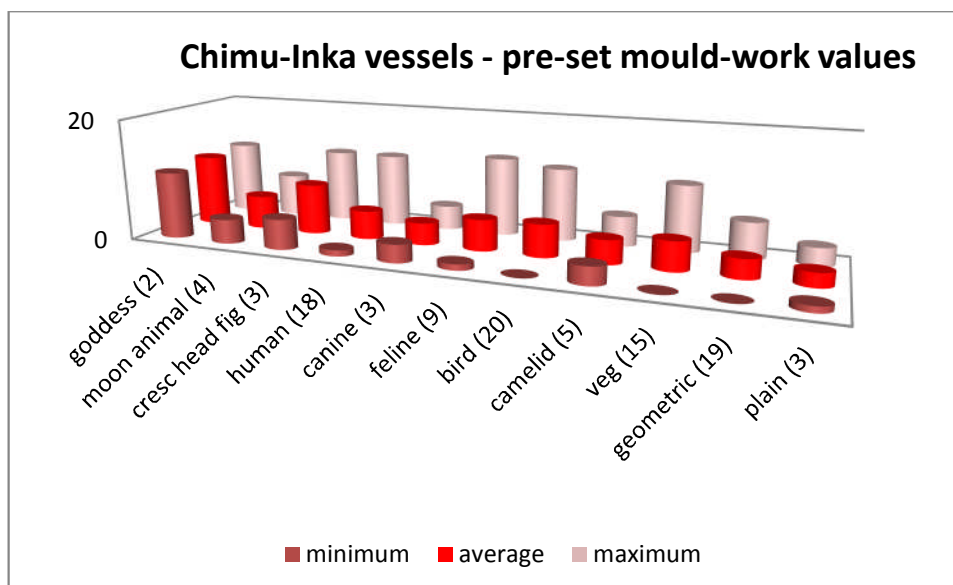


Chart 6.2b Pre-set mould-work values for Chimú-Inka vessels.

owing to one piece being double-chambered with imagery covering both sides of both chambers and constructed using three separate vertical mould-sets (1902,5-16.8). Crescent headdress figures average 5.12 points for mould-work, which is very similar to the value of 5 indexed for the Moon Animal and the 'mythical scene' imagery. Higher values of 7 and 9 were obtained for double-spout-and-bridge vessels portraying crescent headdress figures, which feature several mould-made lugs and a separately-moulded bridge, itself bearing a subsidiary figure (e.g. Q82,886 and Q82,877).

The mould-work values for vessels depicting naturalistic imagery such as humans, felines, canines and vegetables are comparable to those bearing supernatural figures, also clustering around 5 points as is shown in Chart 6.2a. The vegetable category features the second highest average pre-set mould-work value in the sample, of 6.17 points (the goddess involving the most extensive mould-work).

Several factors can be identified as contributing to this. Most fundamentally, vegetables are apparently preferentially depicted in three dimensional form such that the chamber itself is representational, as opposed to images of the crescent headdress figure or Moon Animal which are shown in two dimensions in panels on the chamber sides. Rather than functioning only as a support for imagery, in vegetable vessels the chamber form itself is the image. The second factor which promotes high mould-work values is that 6 out of the 12 of these Chimú vessels in the sample feature multiple chambers. 4 pieces include 4 or more chambers, all of which represent the lucuma fruit (1929,3-5.15 [Fig.6.3 above]; Q82,884; 1900,11-17.20 and 1954,05.666 [Fig.6.4 above]). These vessels were created using up to 3 different mould-sets – two for the chambers and one for the stirrup spout. Arnold's (1999) study of vertical moulding in Yucatan, Mexico emphasised the labour-intensity of this method; analysing the distinct sequential steps involved he showed that for each extra two-part mould used to form a vessel, the number of steps required are increased by a factor of thirteen (1999: 69). In this respect then, it appears that imagery which can be thought of as less religiously or politically charged involves similar amounts of mould-work. Section 6.3 below examines whether this is also true for applied work for these vessel categories.

Stirrup spout bottle examples of the crescent headdress figure account for only two out of the seventeen depictions in the study sample; the two most common vessel forms are spout-and-handle bottles (six vessels) and double-spout-and-bridge bottles (five). Five figures are on lugged vessels and four of these are of the double-spout-and-bridge variety. One is a stirrup spout bottle (1941,4.57) but

instead of the lug being placed at the stirrup/spout junction as is usually the case on such bottles, a lug occurs (broken off) on each side of the chamber at the base of the stirrup – in a similar position to those found on double-spout-and-bridge vessels at the spout bases.

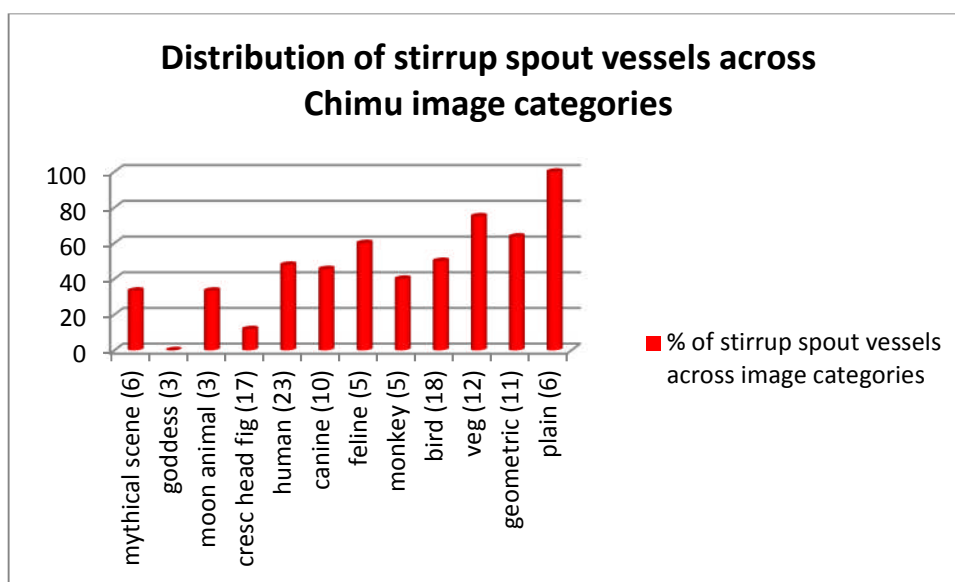


Chart 6.3a: Frequency of stirrup spout bottles as % of total vessels in image categories.

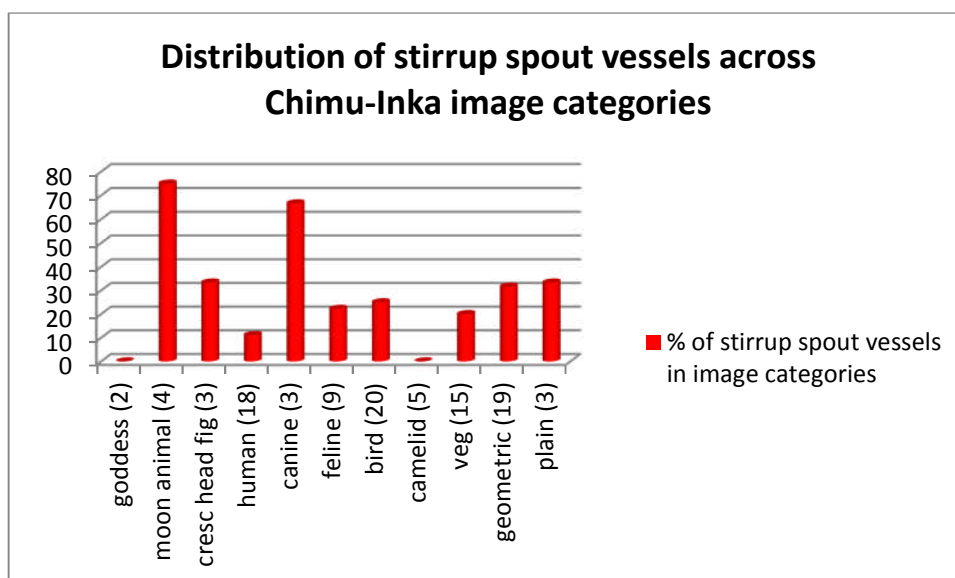


Chart 6.3b: Frequency of stirrup spout bottles as % of total vessels in image categories.

Stirrup spout bottles are more commonly present in association with naturalistic imagery as is shown on Chart 6.3a, than with the supernatural figures discussed above. 60% or more of the feline, vegetable, geometric and plain categories are comprised by stirrup spout bottles, with all six of the plain vessels in the Chimú sample being of stirrup spout type.

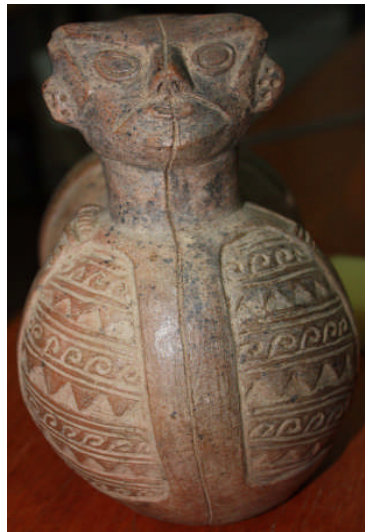


Fig.6.5 ML031783 (Museo Larco, Lima) H: c.25cm; mould matrix depicting the Goddess.

In addition to patterning and lugs, the presence of stippling is a component of decoration achieved via the mould. It seems to be a feature which was applied to the mould rather than being derived from the matrix, as is suggested by an examination of a matrix in Museo Larco, Lima for a double-chambered vessel depicting the goddess (ML031783). The outer surface of each chamber is divided vertically into two panels, each featuring horizontal rows of pendant triangles and volutes while the inward-facing surface of both chambers is plain. A review of Martinez de la Torre's (1987: 423-427) images as well as those in the study sample indicates that both the areas between the pendant triangles and the plain chamber

surfaces are always stippled. The mould-maker would presumably apply the fine dots to these particular areas by means of a sharp metal or wooden instrument, while the clay was still pliable. Chart 6.4a (below) shows the extent to which the different Chimú image categories feature stippling.

It is apparent that the imagery most associated with stippling are those figures likely to be of political and/or religious significance. Fifteen out of the seventeen Chimú crescent headdress figures (88.24%) are depicted on stippled vessels, as are three out of the four Chimú Moon Animals (66.67%). Stippling occurs much less frequently on vessels depicting birds (two vessels out of eighteen or 11.11%) and vegetables (two vessels out of twelve or 16.67%). On one of these latter vessels, a horizontally-moulded representation of a squash (GW/16895, one of the Gordon Willey collection from the Virú Valley in the MNAAH, Lima), a stippled effect is achieved by applying discs of clay to the 'stalk'. This then is an effect obtained through additional work rather than via the mould.

The use of stippling on Chimú vessels is generally circumscribed with discernible differences occurring depending on the type of imagery. As noted, it is particularly associated with such deity figures as those wearing crescent headdresses – both human and the Moon Animal – and in these cases the stippling occurs in relatively extensive panels covering much of the chamber sides, acting as a backdrop to the figure (e.g. BM Q82,886; 1921,10-27.140; 1887,12-6.14). It occurs in a similar manner forming a background to circular and crescent-shaped symbols indicating the sun and moon (BM 1880,4-5.9; ML023371) but occurs on no other vessel bearing non-figurative geometric imagery in the sample before those with Inka-

period features (see below). 30% of vessels depicting canines (three out of ten) feature stippling but rather than backing a two-dimensional image in these instances the markings enhance facial features. Similarly, the stipples on vessels depicting vegetables such as squash create the effect of rough skin. I argue then that stippling played two roles in Chimú ceramics – one as an imitative or naturalistic device as on canine and vegetable imagery and another as a means of emphasising or denoting imagery of religious significance, such as the figures wearing crescent headdresses or lunar symbols.

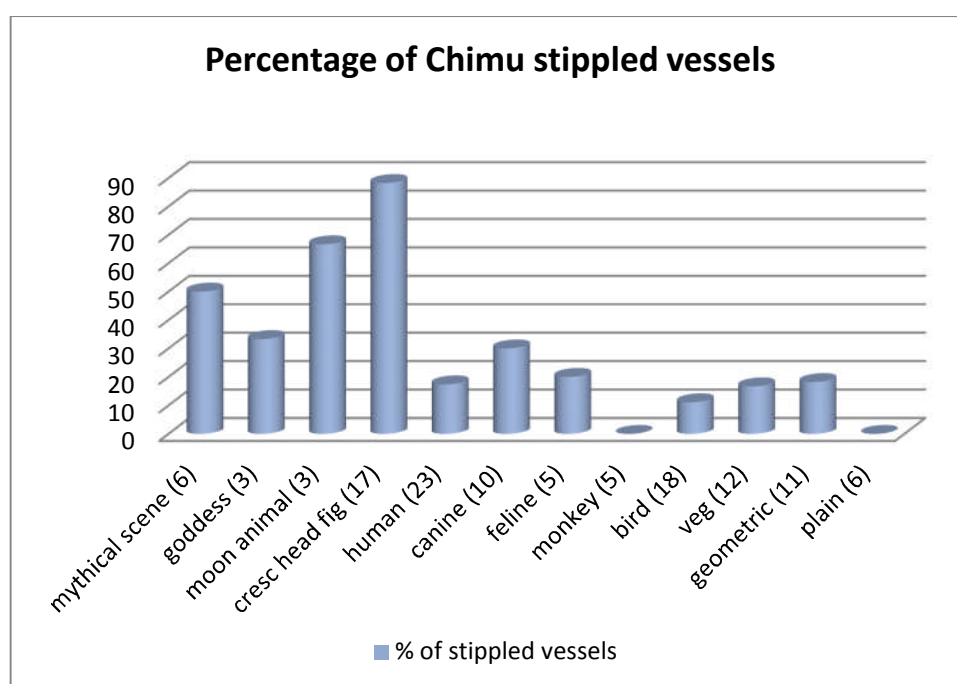


Chart 6.4(a): The frequency of stippled vessels as % of total vessels in each image category.

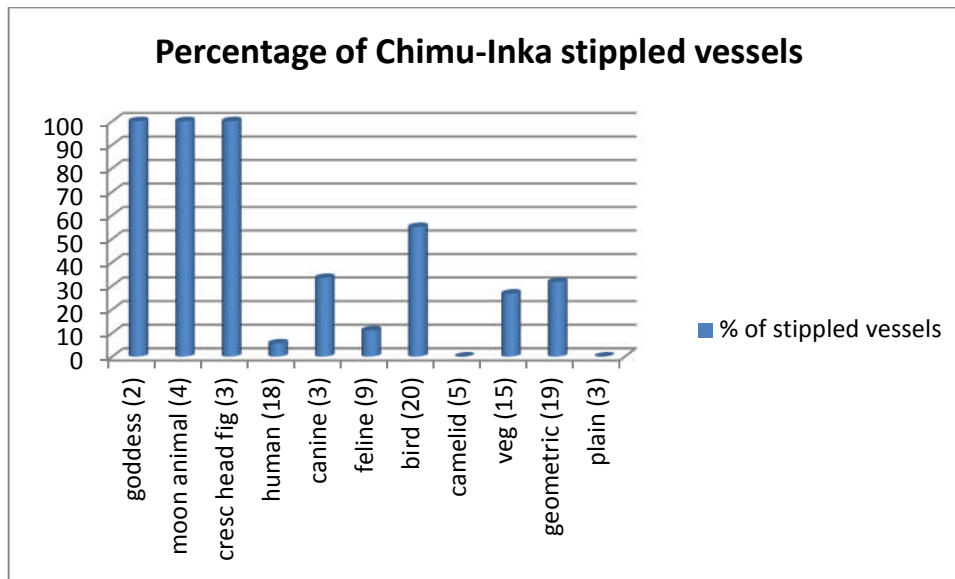


Chart 6.4(b): The frequency of stippled vessels as % of total vessels in each image category.

6.3 Additional and finishing work production steps

In previous decades studies of ceramic moulding in the northern Andes have emphasised the importance of the mould as a constant in stylistic persistence or transmission. In Burger's (1976) study on archaism discussed above, the two-part vertical mould was the mechanism by which Moche iconographic themes were passed down to Chimú potters, albeit in varying degrees of adherence to the original scenes. Similarly Cummins (1998) work on the figurine traditions of coastal Ecuador considers the mould (single-piece in these cases) as constituting an 'exactness' enabling stylistic fidelity; here the mould or whoever controls it is seen as the agent in accurate iconographic replication, rather than the actions of any individual artisan.

Ceramic moulding is far from a single-step procedure however, as is discussed in this section which considers the post-mould labour applied to different vessels.

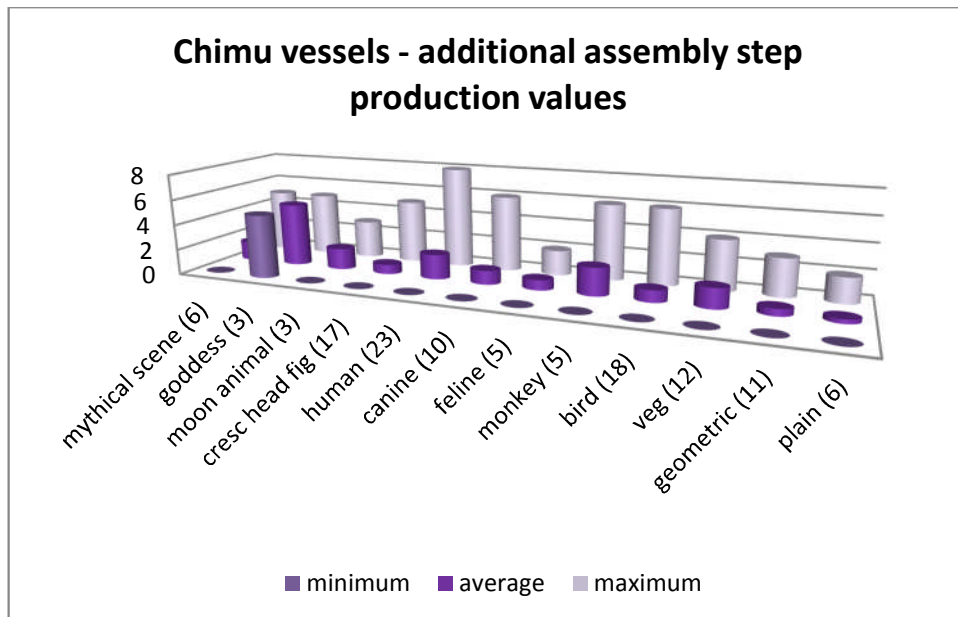


Chart 6.5a: Additional assembly step production values for Chimú imagery.

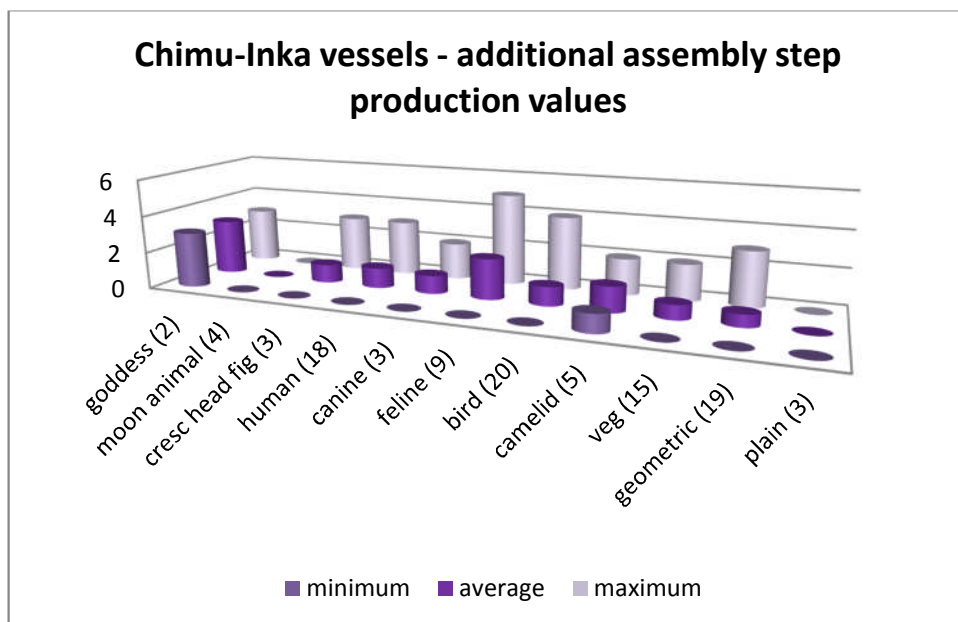


Chart 6.5b: Additional assembly step production values for Chimú-Inka imagery.

Grossman's (1969-1970) study of Chimú ceramic moulds from the site of Huaca Facho, 5km Northwest of the Batán Grande precinct showed the extent of finishing work and smoothing required to give detail to the casts. The moulds included llama, puma and human heads and the experimental casts made by Grossman

produced surfaces with rough, ill-defined features leading him to conclude that the moulds 'were intended only to give basic form' (1969-1970: 34). Ramon (2008) in his study of contemporary ceramic moulding in the highlands of La Libertad, Northern Peru highlights the non-uniformity in mould-made vessels. While potting itself is a widespread ability in La Libertad, only a few also make moulds and matrixes (this is discussed further in Chapter Eight) and these are lent amongst potters. This however does not result in homogenised products and potters are able to distinguish vessels based on 'those details where the hand intervenes' – such as by the smoothing or leveling of the border or the finish on the handles (2008: 219-221).

Indexing the post-mould additional assembly and finishing work involved in Chimú ceramic production then, can indicate the varying extents to which artisans were able to balance the restrictions of the mould on the form of the final vessel with their own creative inputs.

Additional assembly procedures include the addition of hand-modelled elements such as handles, spouts or figure limbs while applied work refers to the application of paint or incised detailing. Charts 6.5 (above) and 6.6 show the values for assembly and applied production step values for vessels bearing super-natural imagery in comparison to other types of figurative and non-figurative depictions. In general all four deity categories feature more hand-modelled additions than applied paint or incisions. The goddess vessels stand out in involving the most extensive post-mould work (both assembled and applied) of any category; a value of 5 for assembled step production compares with those ranging between 0.76 and

1.67 for the other deity representations. The use of paint and incisions is less extensive but an average value of 1 for the goddess compares with values of 0 to 0.18 for the other deities. While higher numbers of goddess vessels would be required to draw definitive conclusions from these figures, the post-mould values suggest that on goddess depictions the earlier pieces feature hand-modelled and applied limbs and accessories (spindle whorls, children, birds). This is not the case with later versions which tend to incorporate the whole figure in the mould such that limbs become rendered in two dimensions rather than three (see below for a discussion of Chimú-Inka vessels). The earliest examples such as Collier's vessel from site V-302 in the Virú Valley (C-28619) feature paintwork which accounts for the applied step production values.

Vessels with mythical scenes and the Moon Animal feature comparable post-mould assembly production step values to other categories of imagery (1.5 and 1.67 respectively) but neither of these figures are associated with any paintwork or incised detailing at all (Chart 6.6a). The additional work on two of the Moon Animal vessels (+2802 Fig.6.6 below and 1858,4-3.32) in the sample is worthy of discussion because it alters the form of what would otherwise be two virtually identical vessels with the same chamber shape and imagery. The chamber is circular with flat sides bearing a depiction of the Moon Animal, seated, in profile and wearing a toothed crescent headdress; he is framed by a circular arrangement of small discs (which can be thought of as large-scale stippling).

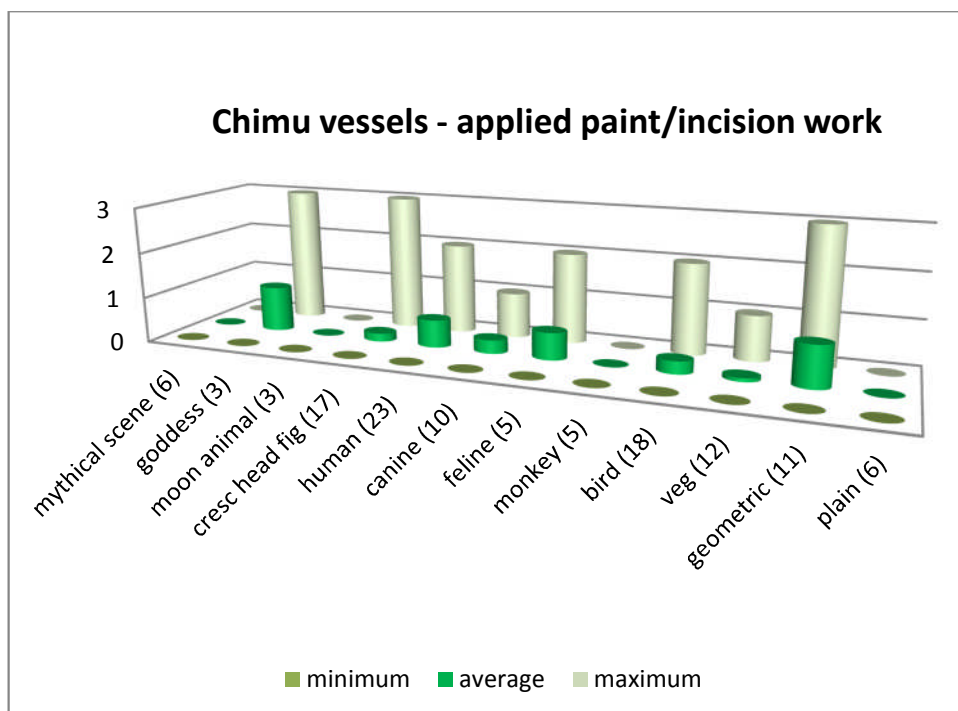


Chart 6.6a: Paint and incision work in Chimú vessels.

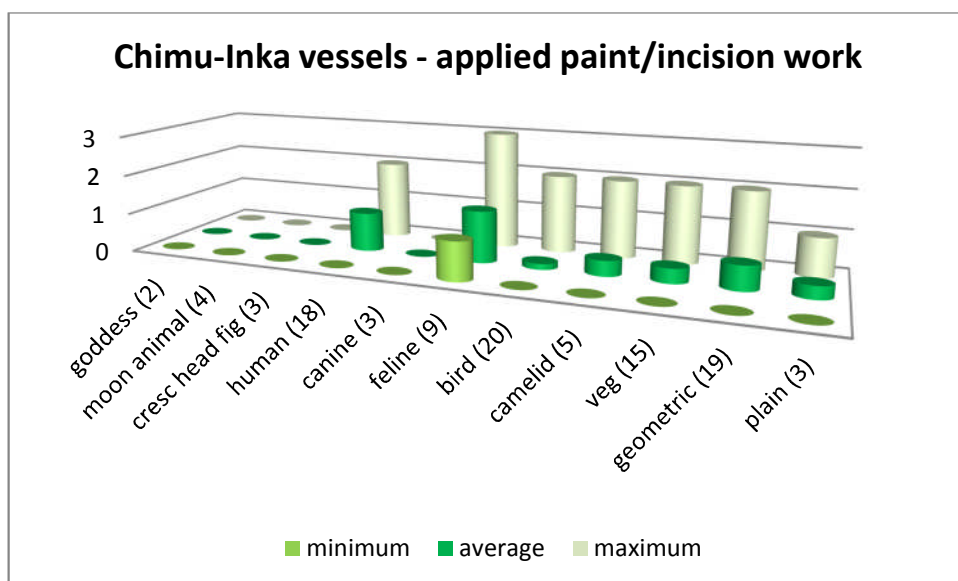


Chart 6.6b: Paint and incision work in Chimú-Inka vessels.

The chamber on both vessels is made in a two-part vertical mould but +2802 features an added stirrup spout while on 1858,4-3.32 the spout is broad and flaring and a handle is attached between the spout and shoulder. These vessels do not

involve the use of the same mould for the chamber (the number of stippled circles is not consistent with this) but other examples of this particular chamber format and image occur in the literature and it seems likely that several such moulds were used to produce vessels with various forms of openings.



Fig.6.6 +2802 British Museum: Stirrup spout bottle showing the Moon Animal in toothed crescent headdress

Another example of such ‘mixing and matching’ between moulded chambers customised with alternative spouts and handles is apparent in a depiction of the crescent headdress figure. This figure features the lowest assembly production step values of the four types of deity imagery (Chart 6.5a) suggesting that this figure may have been subject to more stringent degrees of standardisation with most of the design input going into mould-work rather than post-mould additions. Chapters Seven and Eight discuss this in relation to the data from analysis of the textiles in Chapter Five and consider the extent to which conventions are applied to depictions of the figure in other media. The post-mould additions to vessels

bearing images of the crescent headdress figure are generally in the form of handles and spouts rather than any alterations to the actual figure (e.g. 1941,4.73; ML023072).

There are at least two examples comparable to the Moon Animal case above in which a standardised chamber depicting the figure is combined with different components. The first refers to two vessels in the B.M. collections (1921,10-27.145 and 1921,10-27.147) the chambers of which are identical in shape and imagery. The central figure is shown wearing a *tumi*-like crescent headdress, fringed tunic and loincloth and with arms upraised; draped across the shoulders of the vessel and extending down the back are two serpents and a lizard-like creature in high relief. The only difference between the two vessels is that 1921,10-27.145 features an applied handle at the rear. Moore and Mackey illustrate a very similar vessel (2008: 799, fig.39.8). The second example includes one vessel in the B.M. collections (+2799), a narrow-necked bottle without a handle and depicting the crescent headdress figure wearing a large double-tiered headdress with pointed tips, backed by a stippled panel with bands of geometric elements below. The chamber and image appear virtually identical to a vessel illustrated in Martinez de la Torre (1987: 447, fig.741) – the figure, stippling and geometric bands are the same, if slightly obscured by the high polish at the top and sides of the B.M. vessel chamber. However in place of the single narrow neck, Martinez de la Torre's example features a rather unusual-looking double-spout arrangement involving one open spout set at an angle and one closed spout topped by a canine-like head. Judging by the smoothing and irregularly shaped area around the base in the photograph,

these features were added to the chamber separately. While the construction of the spout on the B.M. example is uncertain (the surface around the spout base is smoothed and uneven, but there is a notch inside the spout where the mould seam would lie) it would seem highly plausible that these two vessels came from the same mould.

The maximum number of points available for finishing work in the version of the PSM developed in this study is four – three for a polished surface plus one for well-smoothed mould seams. The highest averages (3 points) are seen in the Moon Animal, feline and monkey categories; the Chimú deity representations associated with the least amount of finishing work are those of mythical scenes and crescent head figures (respectively, 2 and 2.18 points). With the exception of the low average index of 1.6 points for vessels featuring canines, it appears that deity vessels on the whole feature lower quality finishes than do those pieces bearing naturalistic imagery such as humans, animals and vegetables (Chart 6.7a). This could be considered to relate to the use of stippling, since covering large areas of the chamber sides in *piel de ganso* effectively negates the need for polishing. If Chart 6.7a is compared with Chart 6.4a it is apparent that three out of the four image categories featuring the highest frequencies of stippling (crescent headdress figure (88%), mythical scene (50%) and canine (30%)) also involve the least amounts of finishing work (2.18, 2 and 1.6 points respectively). The Moon Animal depictions (67% of which are stippled) however do not accord with this given that these vessels involve among the highest degrees of finishing work in the sample (an average of 3 points). This figure is also not associated with any paintwork or incised

detailing in the sample (see Chart 6.6a); the mould-work is not any more involved than is the case for other images but it may be that this figure was subject to particular strictures with regard to image form and quality of finish.

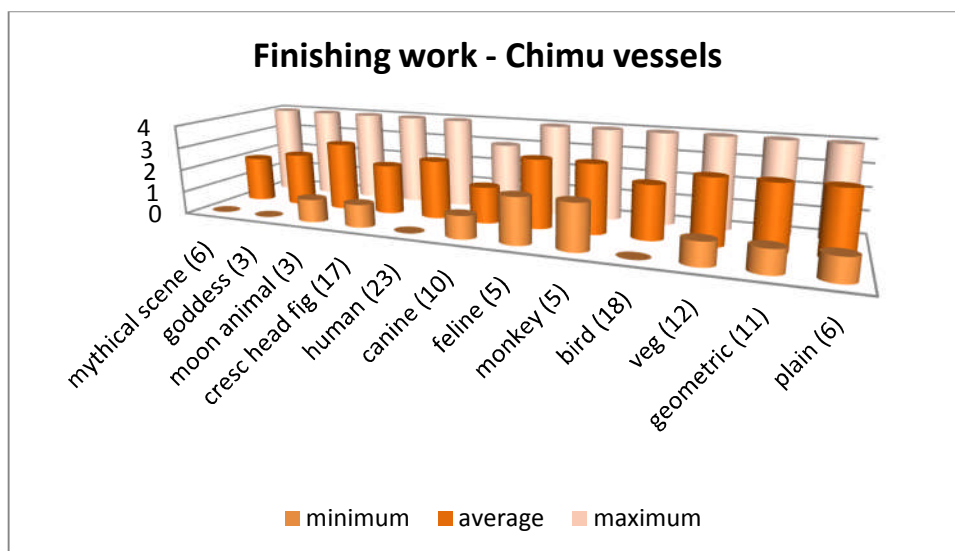


Chart 6.7a: Finishing work values in Chimú vessels.

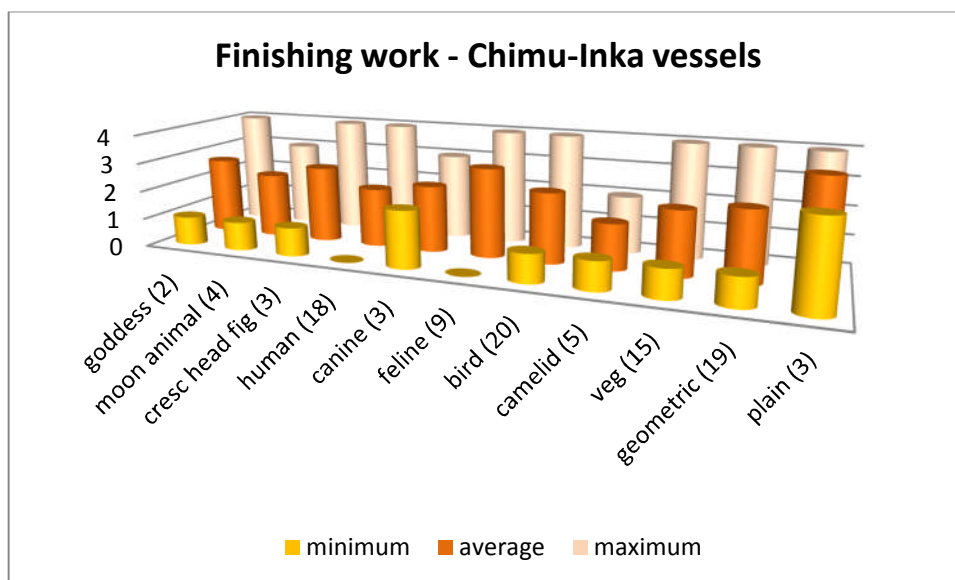


Chart 6.7b: Finishing work values in Chimú-Inka vessels.

6.4 Chimú-Inka ceramic depictions

Depiction of Chimú deities on ceramics and other media continued during the Inka period albeit with alterations in forms and techniques.

Beginning with a comparison of the Chimú mould-work values with their Inka period counterparts (Chart 6.2b above) for supernatural depictions, it stands out that the average value for the goddess is significantly higher in Chimú-Inka vessels (11.67) than in Chimú ones (6.67). Vessels bearing the goddess are not numerous enough in the study sample to draw meaningful conclusions from this, but the important thing which does come out from the sample and published pieces (e.g. Cruz Martinez 1987: 423-427) is that the goddess in later periods is apparently solely shown in three dimensions, on double-chambered vessels. I know of no two-dimensional representations on stirrup spout bottles, spout-and-handle bottles or any other form of vessel. The four decorated surfaces on these vessels result in high indexes for mould-work. As mentioned above, later depictions of the goddess are rendered in an all-inclusive manner in vertical moulds. Assembly work on Chimú-Inka versions of this figure averages 3 points (in comparison to 5 for Chimú versions) which is due to the addition of separately-made bridges and whistles rather than figure elements. Chimú-Inka goddesses in the sample feature no paintwork or incised details at all.

Mould-work values for the Moon Animal and crescent headdress figures are relatively consistent between Chimú and Chimú-Inka versions, as is shown in Chart 6.2b above (compare with Chart 6.2a). On stirrup spout bottles with Inka-related features (such as flat rims and pieced lugs) the Moon Animal appears as a

secondary element rather than the primary motif – either in miniature form along stirrup sides (1954,05.94; 1909,12-7.23) or in slightly larger form in parallel design bands around the chambers (1938,6-7.6). In both cases the motif is turned through 90° from the vertical orientation seen on earlier pieces. This, together with the fact that these later figures are somewhat simplified in form in relation to the earlier ones, suggests that they were executed in the mould by means of small stamps. Small, randomly-oriented stamped figures – usually birds or fish – appear interspersed with stippling on Inka-period vessels (noted by Hayashida 1999:344; Martinez de la Torre 1987: 308-309, fig.327 and see Mowat 1988: pl.28). 1954,05.94 for example, features a single stamped fish motif amongst the small Moon Animals patterning the stirrup sides.

In many Inka-period stirrup spout bottles (a form which increased greatly in frequency from later Chimú times through the Inka period, Scheele and Patterson 1966: 24) the decoration is subdivided into horizontal bands rather than the larger hemi-spherical design panels of earlier phases. This design format would fit particularly well with the technique of using small stamps to apply imagery. It can be argued that in these later vessels the process of creating structural imagery is itself sub-divided by means of applying the design to the mould in steps. This would contrast greatly with the derivation of a mould to form a sculptural chamber depicting a vegetable or a human from wrapping clay around an existing vessel or matrix – and would potentially require less skill.

A further example of the sub-division of the production process of mould imagery marked in Inka-period vessels is shown in pieces such as 1954,05.94, 1934,10-26.1

and 1929,3-5.5 which feature ‘incised-effect’ patterning. Mowat suggested that such effects were transferred to the mould from the matrix rather than being incised free-hand, based upon her examination of two duplicate vessels in the Pitt Rivers Museum (1988: 6; pl.13). There are at least three more examples of this particular design and vessel shape in the current study sample (1934,10-26.1; 1858,4-3.5 and 1929,3-5.5). Incising the matrix in this manner indicates a new treatment in the sense that matrix designs are generally convex in order to produce a concave mould. It allows the production of standardised, ‘incised-appearing’ designs which look as though executed free-hand.



Fig.6.7 1858,4-3.5 British Museum: Chimú-Inka bottle with ‘incised-effect’ patterning.

The presence of stippling is particularly marked in association with Chimú-Inka figures when compared with their Chimú counterparts (Chart 6.4b). Each one of the examples of Inka period goddesses, Moon Animals and crescent headdress figures occur on stippled vessels suggesting that the role of this visual device had intensified by this time. With regard to the other image categories, those featuring the highest number of stippled vessels are birds (55%), canines (33%) and

geometric motifs (31%). The Inka period bird vessels reflect a particularly marked increase in stippling from a figure of only 11% for Chimú vessels. While for Chimú vessels there was a general association between stippling and low average values for finishing work, this relationship is less apparent in Inka period material (compare Chart 6.4b and 6.7b). Here the categories with the highest frequencies of stippling (i.e. the deity representations and bird depictions) do not refer to the lowest average qualities of finishing work; the only category of vessel where there is a clear association between strong finishing and lack of stippling is that of plain vessels.

Some discrepancies occur in the post-mould work for the figures of the Moon Animal and crescent headdress as is apparent when Charts 6.5b and 6.6b (the Chimú-Inka production values) are compared with Charts 6.5a and 6.6a. The Chimú versions of the Moon Animal feature comparable amounts of additional steps to the other image categories (an average of 1.67 points), which take the form of spouts and handles. The Chimú-Inka pieces however include no such additional elements (Chart 6.5b), being rendered in an 'all-inclusive' manner in the mould. Three of these are stirrup spout bottles, which accord with Larco Hoyle's (1948: 55) observation that in the Chimú-Inka period a single mould tended to be used to form such vessels.

Applied elements – paint and incisions – are not present at all in Inka period versions of the Chimú deities as is shown in Chart 6.6b. These features were not frequently associated with Chimú super-natural imagery either (Chart 6.6a) - neither Chimú mythical scenes nor Moon Animal depictions involved paintwork or

incised detailing and only two out of seventeen vessels bearing crescent headdress figures feature mould-made imagery enhanced with incised detailing. The latter two vessels (Q82,877 and Q82,886) are both double-spout-and-bridge bottles with Lambayeque influence evident in the pair of feline head lugs at the spout bases, the moulded figures on the bridge and in the ring bases of the chamber. On vessel Q82,886 the incisions occur on the feline head lugs, concurring with Sicán canons. As mentioned in Chapter Three, shallow polished incisions are a marked trait of Sicán vessels and they occur in highly standardised formats in association with the figure of the Sicán lord, and also with these conventional feline head lugs. While the crescent headdress figures on the chamber sides of Q82,886 feature no incised details, the eyes of those on Q82,877 are executed using a fine circular instrument such as a reed. The effect produced is quite different to the more conventional mould-made facial features on other headdress figures and may well indicate Lambayeque influence. However, the closest parallel to these circular incised eyes is to be found in the adobe friezes at Chan Chan where the eyes on the motifs of the Burr Frieze for example, were cane-stamped (Hoyt and Moseley 1969-1970: 45). Such cross-media influences are discussed in Chapter Seven.

Such post-mould reworking of features though, does not appear to be a characteristic of depictions of Chimú deities and even less so in the Inka period. There is a higher degree of polarity between applied paint/incision work on vessels bearing supernatural imagery and those with naturalistic images during the Inka period (Charts 6.6a and b). There are some differences between Chimú and Chimú-Inka index averages for naturalistic imagery particularly with regard to vessels

bearing human, feline and vegetable forms - these three categories along with plain vessels, feature more applied paint/incision work during the Inka period than earlier. However the most marked point is the contrast between the vessels with super-natural imagery and the other categories of naturalistic and geometric forms with regard to the values for paintwork and incised detailing shown in Chart 6.6b. This may suggest that the extent to which de-standardisation of moulded images operated, altered under the Inka – at least with regard to specific figures. Alternatively the application of incisions and paintwork to vessels can be considered as treatments of clay which bear similarities to techniques used with metal and cloth. The extent to which complementary techniques are utilised with different materials can reflect the organisation of craft production and contact between artisans - or it can suggest that the same artisans were responsible for working objects in different media. As discussed in Chapter Three, archaeological evidence as well as historical documentation confirms the re-organisation of craft production during the Inka domination of the North Coast. Chapters Seven and Eight assess the extent to which this is reflected in the objects manufactured.

The average indexed values for finishing quality are relatively consistent between Chimú and Chimú-Inka vessels (Charts 6.7a and b). While the maximum average finish value indexed for Chimú vessels was 3 (for the Moon Animal, monkey and feline categories) two Inka categories involve average values of 3.11 (feline) and 3.67 (plain). Inka period depictions of the Moon Animal however have reduced in the average quality of finish to 2.25 points; both the goddess and crescent head figure are associated with slightly higher finishing values during the Inka period

(both 2.67 in comparison to the previous figures of 2.33 and 2.18 respectively obtained for Chimú vessels).

6.5 The Toothed and Plain Crescent Headdress figure in ceramics

The analysis of textile depictions of TCH and PCH figures highlighted some marked contrasts in terms of the colour schemes associated with these figures and the production processes involved in their creation (see Chapter Five). In order to see whether similar distinctions can be drawn with ceramic versions, the various crescent headdress figures shown on vessels were assigned to the TCH or PCH category based upon the form of the headdress. As noted above there is significant formal variety with regard to these accessories, but it is possible to distinguish two general types in accordance with the textile equivalents based upon the presence or not of internal elements. There appears to be markedly more variety in the form of ceramic depictions of crescent headdress however than in cloth, but given the numerous appearances of this figure in Chimú iconography in various media, an attempt to show whether Rowe's (1984) textile stylistic classification has any application to clay should be informative.

Equal numbers of each figure were selected from the ceramic sample. All forty figures were classified before ten of each were chosen (only ten were assigned to the TCH category, so the first ten of the PCH figures were chosen to complement these). Charts 6.8a and b show the results of the production step analysis. There are no marked contrasts in the level of mould-work, modelled additions or finish

quality between the two types of figure. A very slight difference is apparent with regard to the use of incisions where the PCH figures show (very minor) amounts of such detailing while the TCH figures show none at all. However, in the textile material analysed there were very marked differences discernible in the balance of pre-set, incremental and assembly production steps used to create these two types of figure. Similar contrasts are not evident in the ceramic depictions. This has implications for the production conditions under which clay vessels were manufactured relative to textile objects and/or that replications of these figures played different roles in different materials between the later Chimú phase and the Inka occupation. Chapters Seven and Eight consider these issues within the context of the production of images in cloth, clay and metal.

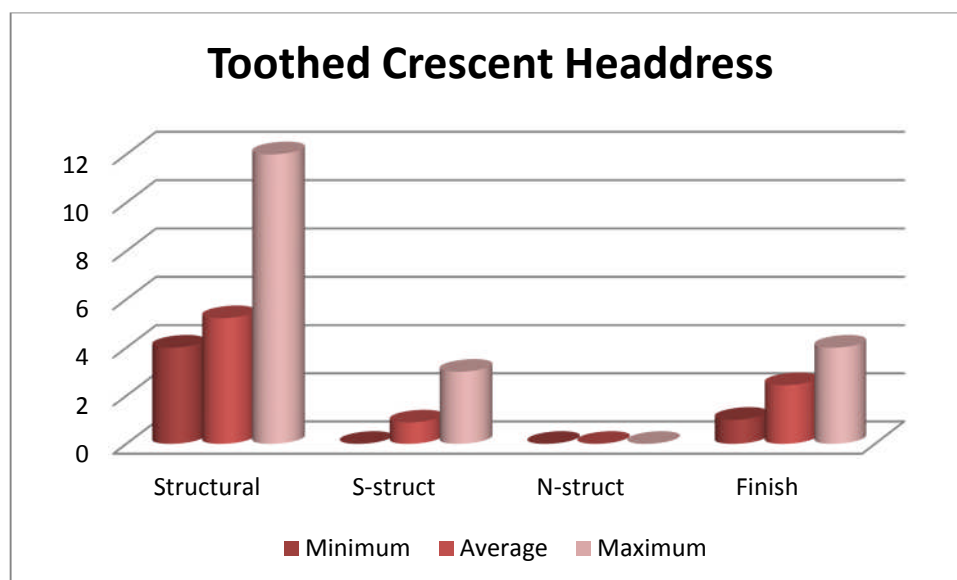


Chart 6.8a: Step production values for 10 TCH figure vessels.

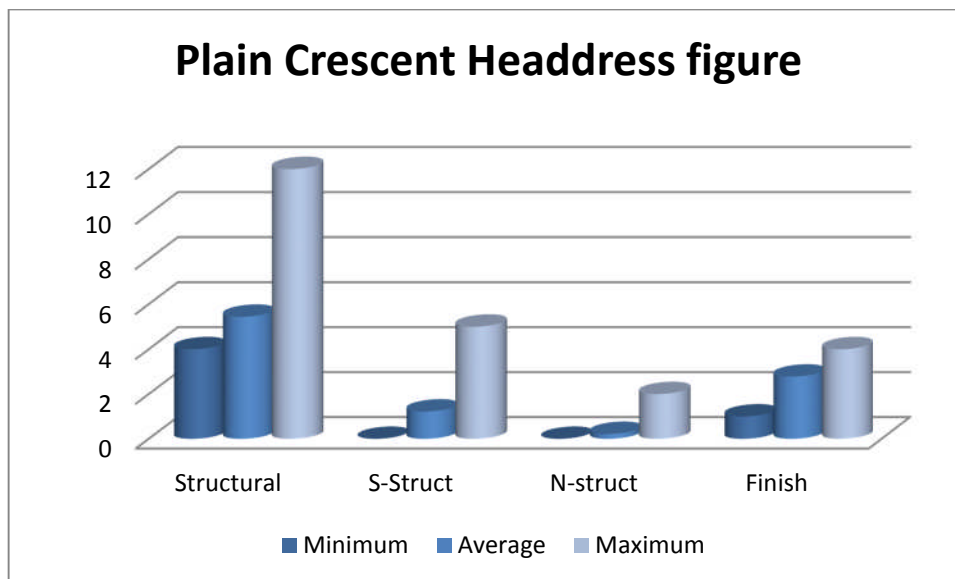


Chart 6.8b: Step production values for 10 PCH figure vessels.

6.6 Summary of ceramic data analysis

Applying the PSM to the sample of Chimú and Chimú-Inka vessels highlights some differences in the extent to which the production process is sub-divided into discrete steps and in the degree to which features set by the mould can be balanced through additional work, with respect to different categories of imagery.

Beginning with mould orientation only 9% of the Chimú vessels were created using horizontal mould-sets, with the goddess and vegetables being the categories with which horizontal moulds are most frequently associated. This reduces to 4% in Chimú-Inka vessels. In later Chimú and Inka-period pieces it seems that design formats which were produced using horizontal sets in earlier material are now rendered using vertical moulds.

The level of mould-work is relatively consistent across image categories with factors such as sculptural and multiple chambers contributing to the higher values indexed for vessels depicting the goddess and fruits/vegetables. Certain figures seem to be preferentially associated with particular types of vessel – the Moon Animal with spout-and-handle vessels in the Chimú period but stirrup spout bottles in the Inka period. Stirrup spout bottles are most commonly associated with naturalistic imagery rather than deity figures in the Chimú period. Stippling occurs most frequently in relation to super-natural imagery where it forms background panels; it occurs to a lesser extent on vessels depicting canines and fruits/vegetables as an imitative device.

The most extensive post-mould work is found on goddess vessels, both in terms of modelled additions and incised or painted details. It is possible to identify examples of standardised chambers which are ‘customised’ with alternative types of spout and handle.

Chimú deity vessels tend to feature lower quality finishes than do vessels with naturalistic imagery, with the exception of depictions of the Moon Animal; there is some association between the presence of stippling on Chimú vessels and low finishing values – but again with the exception of the Moon Animal.

Mould-work values for Chimú-Inka vessels are relatively consistent with their Chimú counterparts, with the exception of the goddess who tends to be associated with significantly higher levels of mould-work in the Inka period. The use of stippling intensifies on deity and bird vessels but the relationship between stippling and low quality finishes is less apparent in Inka period material.

Inka-period versions of the Moon Animal feature no assembly work – they are rendered in an ‘all-inclusive’ manner in the mould. The orientation, small size and simplification of later Moon Animals suggests that they were applied to the mould by means of small stamps, a method likely also used to obtain small repeated figures within horizontal bands and dispersed amongst stippling. Deity representations are not associated with any painted or incised detailing, contrasting with vessels bearing naturalistic imagery.

The textile analysis in Chapter Five, through an examination of the production sequences of cloth bearing different types of imagery, highlighted the fact that specific figures (e.g. TCH, PCH, feline) were associated with operational chains segmented to different degrees. The same can be said for the ceramics whereby different types of imagery are found on vessels involving varying degrees of mould-based and post-mould work. Such segmentation is evident even in vessels which are produced in an ‘all-inclusive’ manner using a single mould-set for the whole piece, in that the design itself in these cases is built up in the mould in modular units by means of repeated applications of small stamps. It could be argued that such methods relate primarily to standardisation and production volume and that they were actively developed by the Chimú state with a view to increasing the efficiency of production of goods in different materials. However, this study will show that such an organisation can also be seen as the product of an engrained technical style which is manifest in the full range of objects in the diverse materials and media utilised by the Chimú.

CHAPTER SEVEN: THE CHIMÚ IMAGE SYSTEM IN MULTI-MEDIA

This chapter sets the textile and ceramic data in the context of Chimú production sequences associated with other media and materials. It assesses the extent to which parallel treatments are evident in the processing of disparate raw materials in their working and formation into craft objects. Consistencies and patterns in the ways of working different materials, in the methods of planning and execution of designs and in the use of colour can indicate cross-craft stylistic features. Such inter-craft technological and artistic styles may reflect artisanal attitudes to the handling and deployment of different substances rooted in long-standing North Coast traditions, or organisational features imposed by the Chimú elite.

Chimú craft production occurred on a previously unprecedented scale, as is particularly evidenced in the later phases of the occupation of Chan Chan where metal-working is introduced apparently following the conquest of the Lambayeque area when textile production also intensifies (Topic 1982; 1990). While as is discussed in Chapter Three, archaeological evidence for ceramic manufacture is distinctly lacking for the Chimú period, vessels which are stylistically assignable to the later Chimú and Chimú-Inka phases account for a large part of museum collections (those of Peruvian institutions such as MA de le UNT and Larco as well as those in the UK such as the B.M.; also commented upon by Rowe 1984: 124). Craft production intensification continues under Inka auspices as is evidenced for example in the introduction of both weaving and potting at the site of Farfán (Mackey 2003: 336-338), and the expansion of metal-processing and working at B́atan Grande (Shimada *et al* 1982) – see discussion in Chapter Three. The late

Chimú and Inka-period developments in goods manufacture are concurrent with significant steps in imperial expansion – annexation of the northern valleys between Jequetepeque and Leche A.D.1360-1400 (Mackey 2009; Moore and Mackey 2008) before the Empire fell to the Inka some sixty years later around A.D.1462-1470 (Rowe 1948: 40). The question then is the degree to which the technological behaviour of late Chimú and Inka-period artisans, manifest in the choice and management of particular materials, was guided by cultural principles and attitudes indigenous to the valleys of the North Coast or whether it was modified in response to the changing demands of an elite for whom the acquisition of ‘luxury’ goods of metal, camelid fibre, feather and shell was key to their ability to carry out their governing roles. If the latter is the case then it might be expected that the technological styles developed around particular substances would be consistent where these were used to create objects which played similar roles in Chimú and Chimú-Inka society, operating in the same cultural sub-systems (c.f. Lechtman 1977; 1993). Goods of materials such as gold, silver and camelid fibre would then be characterised by a different set of stylistic features to those produced using cotton and clay. However the discussion in this chapter shows that traits such as pre-determined imagery, a segmented mode of production and the use of stock planar sheets to assemble objects – all of which are features highly compatible with a ‘production line’ organisation geared towards the efficient manufacture of large quantities of standardised goods – can be identified in objects across the breadth of the spectrum of materials used by the Chimú. The analysis in this chapter also indicates that particularly in the arena of textile production a more nuanced understanding of the manifestation of technological styles is required. It is

apparent that several 'lines' of cloth were active concurrently, both among material assignable to the Chimú and the Inka period, characterised by distinctive combinations of imagery, material, colours, design planning and execution.

7.1 Tradition versus technological control

Lechtman (1993) discusses the relationship between Andean technology and the political environment of *Tawantinsuyu* pointing out how power relations influence what is considered to be technologically possible and fitting, as well as impacting upon how technologies are applied (1993: 247). The Inka Empire provides a good example of how the technological changes necessary to reach state production aims – with regard to subsistence and craft goods – were balanced with basic long-standing Andean traditions. Lechtman emphasises the Inka reliance on the intelligence of the system they managed. The labour force underwent major re-organisation with the establishment of workshops to manufacture ceramics (D'Altroy *et al* 1998; Donnan 1997; Hayashida 1999, 2003), textiles (Narvaez 1995; Mackey 2003) and metal objects (Shimada *et al* 1982); this commonly involved the relocation of whole populations (*mitmaqkuna*) as well as the temporary resettlement of workers fulfilling their labour tax (*mita*). However production techniques – 'the technical aspect of the technology' were long-standing and 'formed the shared experience of the Andean public' (Lechtman 1993: 248).

Costin *et al's* (1989) study of the impact of Inka conquest on technology in the Upper Mantaro Valley showed how little direct effect was actually exerted upon the

material culture of the local subject population, the Wanka. They categorise technological developments in terms of the opposition 'top-down versus bottom-up' change, the former involving the agency of the Inka and local elites who in seeking to increase production outputs to fund their activities or to control the production and dissemination of ideologically charged goods, are the driving force behind new developments. 'Bottom-up' changes rest upon the agencies of individual workers or domestic units who decide that a new method of doing something is beneficial in the efficiency, output or lowered risk offered. The study offers insights into the relationship between a conquering state and local elites. The authors distinguish top-down change at an elite level – for example in which the labour invested in the manufacture of local storage jars in polishing and decorating rises, indicating continuation to an extent, of local elite power (1989: 119) - from that at the level of the Inka state which saw the introduction of aryballoid jars visibly reinforcing Inka presence. Bottom-up technological changes are apparent in local responses to direct Inka demands on production – for example in the increased use of hoes in agriculture (1989: 131) to achieve the required volumes of maize production – and in the persistence of indigenous technology in spite of relocation away from traditional raw material sources.

With regard to the Chimú expansion in the valleys north of the Moche-Chicama heartland, Cutright (2009) investigated the extent to which domestic life and culinary practices altered in a small rural settlement, Pedregal, in the Jequetepeque Valley as it was annexed to the Chimú state in the 14th century AD. She found that while there were significant increases in the household processing

of cotton and maize the intensity of textile production as evidenced in the frequency of spindle whorls, and the end products remained consistent throughout the LIP (2009: 245-256). Cutright highlights the lack of evidence for intensive textile manufacture noting that the stored skeins of thread which have a strong presence in the *barrio* households at Chan Chan do not characterise the Pedregal houses (2009: 252). Generally, households seemed to change the focus but not the range of domestic economic activities in response to Chimú state demands.

This accords with Lechtman's (1993: 248) observation that in the case of Inka subjugation of local populations the technical changes prompted 'were changes in scale, not in kind, changes that never alienated or expropriated from the populace its technical knowledge and skills'. In the Andes technical knowledge was not confined to the upper tiers of society. The most obvious example of the segregation of specialised knowledge among a select group is that of the *quipucamayocs*. These individuals were highly trained and in so far that those lacking the requisite knowledge could not understand them, the concept of bureaucracy may be applicable being based upon the control and processing of information (c.f. Topic's 2003 study arguing that bureaucracy is evident in the form of the administrative architecture at Chan Chan). The 'non-hardware' aspects of textile manufacture however - the knowledge, skills and cultural commitment (Lechtman 1993: 258) - were widely spread among all sectors of Andean society. The 'hardware' features – production tools such as spindles, whorls, and looms of various types (Skinner 1975) – were straightforward and by the Inka period textile production had a development history of some four thousand years. Thus, while

the content, or symbolic meaning, encoded within *quipus* may have been restricted the techniques and materials used in their production were widely shared aspect of Andean material practice.

7.2 Lechtman and the concept of ‘technological style’

Lechtman’s pioneering (1977) work showed that not only the finished artefacts but the activities producing them, are stylistic. She suggested that what lies behind such technological styles were the attitudes of the artisans towards the materials they used with the resulting objects referencing what is seen as the appropriate cultural performance (1977: 10, 12). Two factors emerge from her extensive analysis of Andean metal-working traditions (e.g. 1977, 1981, 1984, 1988, 1993). The first is that the notion underlying Andean metallurgy was what she refers to as ‘the incorporation of the essential ingredient into the very body of the object’ (1977: 10) and the second that the appropriate way to manage metal was to work it, giving it form by means of plastic deformation rather than manipulating it in a liquid state as in casting techniques. Lechtman herself suggests that several technological styles may be active concurrently within a culture, for the production of utilitarian and ritual objects for example (1977: 15). She also raises the question of whether the same styles are evident in disparate technologies when objects operate within the same cultural subsystem. In the closing section of her 1993 study (272-273) she begins a discussion of the extent to which cloth in the Andes might relate to metal in terms of the choice of using primarily structural techniques to render imagery. She draws parallels with the favoured Andean method of

obtaining a silver or gold surface on metal objects - that of 'depletion gilding' or 'surface enrichment'. This technique involves a repeated sequence of hammering, annealing and removal of surface copper oxide, resulting in a silver or gold surface on an alloy much of which was composed of copper (1984: 21-24). This contrasts with the alternative gilding methods developed on the North Coast such as electrochemical replacement plating, involving the plating of a gold surface onto copper prior to assembly of the object, used by the Moche at Loma Negra (Lechtman 1984: 15-20). The former procedure, depletion gilding, involves the presence of the surface element within the structure of the object itself rather than merely being a superficial addition. This shows close parallels with the structural weaving techniques developed in the Andes in which there is no distinction between the surface imagery and the body of the fabric, in contrast to embroidery for example. However, I feel that an analysis of the technical choices made during production of cloth and metal objects could be taken further and also extended to include the material of clay and its media (ceramics and friezes).

Firstly, it needs to be taken into account that while structural weaving methods (what I have been referring to as pre-set or incremental) – in a great number of forms – predominated in the Andes, different cultures are associated with different suites of techniques of cloth production. Lechtman's work focused primarily on the metallurgical methods characteristic of the Peruvian North Coast, while her brief discussion of cloth pertains to Andean textiles in general. Her 2007 study of the relationship of the Inka to Andean metal-working traditions however points out that while forming metal by means of plastic deformation was prevalent in the

central Andean region (by which she means the area subsuming the modern southern border of Colombia, Ecuador and Peru), in the south-central Andes and particularly in northwestern Argentina by the close of the Middle Horizon a tradition in which objects such as discs, axes and bells were cast solid from copper and its alloys had been developed (2007: 336). During the Late Intermediate Period then while the Peruvian North Coast was characterised by a metal technology based upon plastic deformation work, in the South-Central Andes metal objects were manufactured using the casting method. In the same way different Andean regions utilised different textile techniques; while certain methods such as tapestry were used in the various regions of the Peruvian coast and in the highlands (albeit in different forms – slit and interlocked) other methods are particularly associated with certain regions. The Chimú for example, made extensive use of a variety of techniques to apply supplementary weft imagery to cloth (see Rowe 1980: 90-92 and examples in Rowe 1984) as well as utilising various means of decorating cloth such as with applied tassels, fringing and feathers. To address Lechtman's theory that textiles which were active within the same cultural subsystem as metal goods should display similar technological styles, it is also necessary to consider how fine camelid fibre tapestries played a different role to cotton cloth with coarsely-executed supplementary patterning. However not all Chimú tapestry is of camelid fibre and bearing symbolically-charged imagery. Equally, camelid fibre can be used to weave cloth with for example TCH figures, using supplementary methods. This chapter tries to draw out the relationship between cloth, metal and clay by assessing the similarities in the technical choices made during the production sequences of objects made using specific techniques.

The second point which can be made with respect to Lechtman's comments on the technological style manifest in Andean metal and cloth is that she does not consider the depletion gilding step within the context of the complete production sequence of a metal object, when relating it to weaving. The hammering and annealing stages whereby sheet metal of a specific colour is produced from an ingot of the *tumbaga* alloy might be considered as 'structural' in the manner in which the visual attribute (i.e. the colour) of the metal is achieved. However, if one then considers that metal objects on the North Coast were commonly assembled from many pieces of sheet metal joined together by various means, into a three-dimensional form (see Lechtman 1988: 360-369) the term 'structural' seems less applicable. It does however fit very well with the characteristically 'assembled' garments of the North Coast as will be discussed further below. I would argue that cast objects can be classed as structural (or 'pre-set' in the terms I have been using) with more reason than can the joined, worked pieces in that the image of a casting is obtained in a single step and is integral to the body of the object. This makes highland Andean metalworking and garment construction highly comparable in terms of technological style. As mentioned, the casting method was well-established in the south-central Andes by the Late Intermediate Period but during the Late Horizon casting pieces of tin bronze became particularly associated with the Inka state (Owen n.d. cited in Lechtman 1996: 35). Inka tunics might be considered as the archetypical 'integrated' cloth item on several counts - because of their execution in interlocked tapestry, because they involve only a single web of cloth folded over and sewn up the sides and because the neck-hole is woven in rather than being made subsequently (Cobo 1990 (1653): 186 describes the

construction of Inka tunics and see Rowe 1995; Rowe and Rowe 1996). Textile-metal relations are discussed further below in this chapter, both with regard to Chimú and Inka craft production.

The next section of this chapter considers how the initial treatments of the raw materials used in Chimú craft production relate to one another. After this I compare different stages of the production process of textiles, architectural friezes and ceramics, first dealing with the pre-planning of imagery, the second with its incremental execution while the third part looks at additional, assembly and finishing processes. From this can be gained some idea of the inter-relatedness, or systemic nature, of the Chimú multi-media *oeuvre* and the extent to which its main stylistic features can be said to be rooted in craft-working traditions rather than being the direct result of state-imposed demands.

7.3 Material properties

Sillar's (1996) study showed how contemporary Andean peoples borrow techniques pertaining to one technological sphere and apply them to another. In particular the steps to which clay is subjected to during processing parallel those applied during food preparation, specifically of freeze-dried potatoes. Clay preparation involves drying, grinding, mixing and kneading prior to being ready to form pots with. In this section I focus on the action of kneading because it links together the initial processing steps to which cotton, clay and metal are subjected to. I argue that, in so far as working or kneading was the action applied to these

materials to form planar sheets, plastic deformation was the base transformation upon which a suite of coastal techniques were founded.

Vreeland's (1986) survey of contemporary cotton processing on the North Coast of Peru details the steps involved in preparing raw cotton for spinning. He describes how the seed cotton is opened out 'in a flat diaphanous mass', the seeds being removed as the fibre is 'pulled apart in a more or less two-dimensional plane' (1986: 367). Dozens of these thin locks are then stacked together into a pile which is beaten with wooden switches until the fibre mass is compressed. Several times this is folded in half and beaten again until the fibre is firmly compacted, before being rolled up to form a cylinder (*copo*) ready for spinning. At the Moche site of Pampa Grande in the Lambayeque Valley, Shimada (2005) found evidence of large-scale cotton processing in a compound known as the Deer House in the form of a layer of charred cotton fibre up to 10cm thick covering much of the plastered floor of a burnt interior courtyard (2005: 184). The cotton had been ginned and beaten into this compacted layer, and Shimada suggests that this courtyard was the venue for the collecting and processing of cotton brought as tribute before being spun and woven elsewhere in the city. This 'working' step of the processing of raw cotton was thus separated from the subsequent formation of cloth.

Bankes' (1989) work on potting in contemporary Morrope on the North Coast describes the clay processing steps followed. After soaking and the addition of non-plastic material such as sand, clay is kneaded before being shaped and pressed into a mould (1989: 32). With respect to Moche ceramic technology, Donnan (1965: 118) points out that liquid clay slip was never used; examples of Nasca pan-pipes

which were manufactured using the slip-casting method however do occur. The North Coast tradition relied upon hand-working to plastically deform the clay, thus obtaining an impression of the imagery through pressing the flat sheet of clay into or around the mould. The choice of whether the outside or inside of moulds is used to produce the image has been examined by Van der Leeuw *et al* (1991) in their study of contemporary potting in Michoacan, Mexico. These authors showed how the potters' conceptualisation of the appropriate way to form a vessel was constrained by the governing distinction between interior and exterior such that the outside of the pot had always to be formed against the inside of the mould (1991: 162). While the clay sheet is being pressed against the mould the side which does not come into contact with it is smoothed (Van der Leeuw *et al* 1991: 153); once the clay in each part of the mould is partially dry the two parts are forced together (Arnold unpub: 4).

The choice of working clay in flat sheets to be forced into a mould contrasts strongly with the method of shaping pots using the coiling technique. This was a method commonly used to create Nasca pots (Bankes 1989: 37) and also to fabricate Inka aryballoid vessels in the Cuzco region (Lunt 1988). Coiling involves rolling clay into a 'sausage' which is then wound round in a spiral form and pinched onto the wall of the vessel. Lunt's experiments showed that even small vessels constructed in a single continuous coiling process do not maintain their form, but if the vessel is formed in sections (each section being left to dry out prior to assembly) then large Inka-sized pieces can be obtained and the correct angles in the profile achieved (Lunt 1988: 495). I suggest that this segmented mode of assembly

made the manufacture of Inka aryballoid vessels particularly adaptable to production on the North Coast using local moulding technology – and generally highly compatible with the Chimú ‘art of assembly’ (Lechtman’s 1988: 360 term) manifest in cloth, metal and ‘multi-media’ objects (discussed further below). Arnold (unpub.: 6) examined the joints of the coils used in the fabrication of Inka vessels (of non-aryballoid form) and found that while smoothing occurred on the outside, on the inside some joints were simply pressed down making the vessels susceptible to breakages. He also found that coils were not completely compressed against the vessel side; in order to make the coils stick together potters apparently employed striations or incisions of various kinds made using a piece of cane or stone tool (unpub.: 6). These features suggest that the motion of kneading and manipulating clay via plastic deformation had less of a role to play in the ceramic technological sphere of the Inka than in that of the Chimú, where it cross-cut the technical understanding applying to different material domains.

The North Coast propensity for working metal – manipulating it in a solid state rather than a liquid one – has been referred to above. Sheet metal was formed from ingots of copper-gold or copper-silver alloy, hammered to reduce the thickness and increase the area. The thickness tended to be of remarkable uniformity as Lechtman (1996: 228) notes in her technical analysis of a Chimú pectoral, citing an average value of 0.033cm thickness for the base plate. Properties of these alloys confer a hardness upon hammering, but also a retention of flexibility making the resulting sheet metal highly comparable to kneaded clay and webs of cloth. The creation of imagery using metal sheet is discussed in a

subsequent section in this chapter, but for now I wish to point out the overlapping technical treatment of metal and clay surfaces. Firstly, it is likely that the tools employed to work these substances were the same – Van der Leeuw *et al* (1991: 153) note that the clay paste is ‘hammered...with a mushroom-shaped pestle’ during the process of potting in Michoacan. Carcedo de Mufarech’s (1998) study of the different types of metal-working tools in the Museo de Arqueología, Lima includes a description of an anvil shaped like a ‘mushroom’ and she illustrates a similarly-shaped hammer being used to form metal sheet. Secondly, the finishing procedures to which metal and clay were subjected are very similar. Lechtman’s analysis of the Chimú pectoral referred to above (1996: 228) notes the perfectly flat surface with all hammer blow marks removed and the surface finished by burnishing. Pottery surfaces are treated in a comparable manner, if to varying degrees – smoothed to remove any irregularities from the construction process and then burnished with a fine hard stone while the vessel was still damp (Bankes 1989: 47).

The treatments applied to cotton, clay and copper-based alloys during the early stages of the production sequences for objects manufactured using these substances are then closely linked. The artisans of the late Pre-hispanic North Coast working in different materials made use of properties such as malleability, flexibility and shape-retention to create groups of technically related objects. The next section of this chapter discusses the extent to which these objects relate in terms of the conception of their imagery.

7.4 Image planning in cotton, clay and metal

The data analysis in Chapters Five and Six showed how the realisation of imagery in textiles and ceramics is segmented into processes which can be classified as ‘pre-set’, ‘incremental’, ‘additional’ and ‘assembled’ with differing emphasis on each depending upon the techniques used. This chapter compares image production in cloth and clay with that in other media and materials – namely adobe friezes and metal goods – in order to identify assemblages of techniques with conceptual similarities which index engrained North Coast technical propensities. I begin with a discussion of the means of ‘pre-setting’ imagery within the body of objects in different media and materials before moving onto the Chimú use of various incremental and applied methods of building up designs.

The concept of setting what can be thought of as ‘default’ imagery in an object needs some clarification, firstly to note that by ‘default’ I refer to the Collins dictionary (2008: 430) definition ‘the preset selection of an option offered by a system, which will always be followed except when explicitly altered’. Secondly, particularly with respect to Chimú potting and metal-working and the strong reliance on templates or standards, design setting using such physical aids as matrixes should be distinguished from intrinsic methods relying on memory such as were applied in weaving. Here I would like to draw comparison with Goodenough’s (1964) theory of the ideational and phenomenal cultural domains. For him with the phenomenal order of events, of behaviour, of artifacts within a community ‘...Similar, but never identical events occur over and over again and are therefore isolable as types of event and patterned arrangement. ..An observer can perceive

this kind of statistical patterning in a community without any knowledge whatever of the ideas, beliefs, values and principles of action of the community's members, the ideational order...The ideational order, unlike the statistical order, is nonmaterial, being composed of ideal forms as they exist in people's minds..' (Goodenough 1964: 12). Goodenough considers culture to take the form of a cognitive code distinct from material objects and behavior, a view which is useful in distinguishing different types of Andean design conceptions. Phipps (2004) highlights the difference between Andean and European weaving techniques during the convergence of textile traditions in the viceregal period in Peru, noting the European use of cartoons as templates from which designs were copied in contrast to the Andean reliance on '...intrinsic, culturally generated memory techniques' (2004: 73). With regard to the latter, she cites a seventeenth-century manuscript of the friar Martin de Murua which details the 'transcription' of a textile into a notational form involving the recording of the cloth, thread by thread and row by row (c.f. Desrosiers 1984 (1986); E.Franquemont 2004). It should be noted that the apparent Moche use of models for weaving (as on the scene on the vessel in the British Museum mentioned in Chapter One) and also the Inka wooden pattern boards from Manchan (Mackey and Klymyshyn 1985) are similar to the European cartoons. However it could be argued that such use of models applies only to tapestry and that the production of warp-patterned structures would have involved very different conceptions of design.

Gell's (1988) comments on the relationship between technology and magic are also of interest here. He considers magic to set '...an ideal standard, not to be

approached in reality, towards which practiced technical action can nonetheless be oriented' (1988: 5). He emphasises the cognitive role of ideals in providing a guiding framework within which technical activity can occur. This chapter argues that while some Chimú techniques made use of such tangible ideal standards as matrixes and moulds to reproduce imagery, other methods of image creation required high degrees of mental planning and foresight in advance of design execution.

7.4a Architectural friezes

Some of the clearest examples of design planning are to be found in the architectural friezes at Chan Chan where the use of guidelines to place imagery are evidenced. Hoyt and Moseley in their 1969-1970 analysis of the Burr Frieze, Ciudadela Velarde note the presence of a faint incised dotted line beneath a catfish motif on a section of fallen frieze (1969-1970: 45). This frieze is of particular interest because it evidences both the 'subtractive' technique and the 'additive' method analysed by Pillsbury (1993). Her work showed that the friezes in the earlier compounds, such as Uhle, were constructed by means of modelled or moulded applications placed on top of a single thin plaster layer. These reliefs could have been modelled *in situ* but Pillsbury believes that they were modelled separately and applied owing to the separation of figures, the absence of tool marks, rounded forms and a generally less planar surface (1995: 50). The subtractive method on the other hand, is based upon excision. It involves the application of a c.3cm thick layer of plaster with designs being cut from this layer

down to the level of the base layer thus allowing a planar surface to be obtained. In these examples (e.g. friezes in Ciudadelas Velarde and Squier), figures tend to be closer together with less background space, and tool marks are evidenced (Pillsbury 1995: 51). Pillsbury suggests that this method was developed in the late Chimú period about the end of the fourteenth century, and continued in use into the Inka phase. The Burr Frieze consists of horizontal bands of fish, crustacean, anthropomorphic and ornithomorphic figures, but Pillsbury (1995: 52) notes the presence of vertical lines dividing the scene into panels. The frieze had to be fully excised while the second layer of plaster remained damp enough to be malleable, thus necessitating construction in sections. It seems then that segmented or modular production also characterised the large-scale, fixed imagery of the architectural friezes as well as the smaller, portable designs on textiles and vessels. While Moseley's (1975) work suggested that such division was evidenced much earlier on the North coast in the construction of Huacas del Sol and de la Luna, it can be argued that it is in the late Chimú period that segmentation becomes a significant and pervasive feature of craft production.

The conception process is also evidenced in the chess-board designs on the walls of Ciudadela Squier which are thought to have been executed using cords (Morales, pers.comm.1990 cited in Pillsbury 1995: 51). Temporally this compound has proved problematic to place in sequence amongst the others of the capital, but it is considered as the latest by Topic and Moseley (1983). Many of the (published) friezes in the later compounds such as Tschudi, Squier and at Huaca Esmeralda are of strong geometric form (see images in Pillsbury 1993: figs.15-18, 79; Campana

2006: figures pp.84-89) and it seems likely that some form of guiding lines or a grid would have facilitated their construction.

7.4b Warp-patterned cloth

I suggest that the conception of a design on a flat clay surface such as the walls of the Chan Chan compounds with the aid of dividing guide lines bears close similarities with the planning of a warp-patterned design on a textile. As mentioned in Chapter Four, a key feature of warp-patterned cloth is that the design is at least partly set out with the warping of the loom. In the study sample the image category with the highest frequency of warp-patterning are the geometric textiles. Eleven out of twenty five (44%) of geometric textiles feature some form of warp-patterning (see Chart 7.1 below). Seven of these bear simple warp-patterned stripes, two examples of DWW show large-scale stepped concentric diamond motifs (U-01126 [Fig.5.5, Chapter Five] and U-01125b [Fig.5.16, Chapter Five]) and two examples of double cloth show striking large-scale stepped geometric imagery – frets (1954,05.475, Fig.7.1) and a stylised catfish- or ray-like creature (2006,Q16, Fig.7.2). (It is acknowledged that double cloth is balanced rather than warp-based in terms of patterning, but I include it in the warp-patterned group because the warp value indexed is more than zero). These two latter double cloth pieces are notable because the scale and stepped form of the designs are most commonly associated with cloth produced using the DWW method.

Fig.7.1 (below left) 1954,05.475 British Museum: double cloth with stepped frets. Fig.7.2 (right) 2006,Q16 British Museum: double cloth with stylised ray motifs? L: 73cm, W: 20.5cm



These pieces may represent imitations of this fiendishly complex technique – it seems highly probable that the textile-literate Chimú audience would be able to identify the ‘source’ design. Desrosiers (2008) argues for a similar imitative process in her analysis of a well-known Early Horizon tunic from Ocucaje in the Textile Museum. The two main panels of this piece feature interlocked snakes with stepped outlining done in the DWW technique, but Desrosiers considers that the model for this design was a complementary warp weave band with warp substitution operating along diagonal sequences of snakes and following a colour rule. She sees the tunic snake motif as a magnified version of the warp-patterned design with the stepped outlines denoting the enlarged individual warp threads. She makes the same argument for the conception of the stepped pelican design on the DWW panel in the Metropolitan Museum of Art (accession number 1979.206.601, see Rowe 1984, pl.4).

An emphasis on creating patterning through manipulating the warp rather than the weft had a long history on the North Coast by the period in which Chimú weavers were active. Conklin has described the method used by Chavín weavers, warp-wrapping, which involves the application of coloured cotton around an uncoloured core (Conklin 1971, 1978: 5). A variant of this method was developed to allow the creation of stepped diagonals, whereby cotton was wrapped around a group of warps. One of the most technically interesting textile fragments recorded by Conklin though was attached to a Chavín carved calabash. The construction is single-element, termed knotted looping, with the colour pattern formed by wrapping the core thread with coloured camelid fibre in a sequence of colour sections such that the pattern appeared as the construction was carried out (1978: 4). Given the lack of warp or weft though, this cannot be considered as a textile.

Another construction method appearing very early on the North Coast among the Initial Period textiles excavated at Pampa Gramalote is that of twining (Conklin 1975 cited in Conklin 1996: 327). In twined fabrics, rather than crossing and re-crossing, ‘..pairs ..of adjacent elements of one set spiral or turn about each other in their passage through a fabric, enclosing successive elements of the other set..’ (Emery 1966: 196). A wide variety of structures are possible in twined textiles. Particularly interesting is the fact that at Pampa Gramalote, twining was used for all textiles with patterned designs while weaving was used for the utilitarian fabrics (Conklin 1996: 327). Thus there is an apparent emphasis on the warp, or the vertical, for special cloth while the utilitarian fabrics are weft or horizontally-focussed. Here I suggest a comparison with the utilitarian ceramic vessels formed

in horizontal mould-sets discussed in Chapter Five, with vertical mould-sets being used for the more elaborate pieces found in burials.

One feature of note of the Pampa Gramalote textile sample is that a third of the twined fragments employed warps which consisted of a pair of an S-spun single yarn and a large-diameter Z-plyed yarn (Conklin 1996: 327). Conklin considers this to be a deliberate choice, a conscious combination of opposites; he also suggests this pairing as a cultural precedent for the Chimú characteristic of paired warps. Wallace (1979: 42) on the other hand, referring to the use of paired wefts, sees the pairing of elements as economising on effort in that it avoids plying, adds strength and creates more woven material of a similar density than does the same amount of plyed yarn.

The second imagery category in the study sample to feature warp-patterning is that of the TCH figure (two out of nine examples or 22.22% - R-1862 [Fig.5.8, Chapter Five] and a piece yet to be assigned a registration number in the B.M. collections, which was discovered too late to be included in the P.S.M. analysis). These are part of a suite of technically related textiles, the others of which feature fish and bird imagery, from El Brujo. They are similar to the group of tunics discussed by Rowe (1984: 82-88) which she assigns to the TCH style (also see Rowe 1977: 54-63 on this technique and its variants). These pieces feature paired warps and the decorative columns are woven in alternating float weave which involves alternate warps and wefts interlacing over-one, under-one while the rest interlace over-three, under-one with the three-span floats in alternating alignment (Rowe 1984: 85). They are made wholly of cotton and as such were presumably utilitarian,

although Rowe's examples are padded with raw cotton and extremely long which suggests they may have played a different role to the shorter, unpadded Chimú tunics. These cotton, warp-based TCH figure textiles form a coherent assemblage which contrasts with the camelid fibre weft-based tapestry and supplementary weave examples discussed in Chapter Four. Interestingly Rowe's (1984) examples (e.g. figs. 60 and 61) are highly assembled with features such as applied borders, fringing and sleeves which parallels the camelid fibre versions.

All of these examples show a deep-seated North Coast emphasis on using the warp not merely as a repetitive structural element to hold the weft based design, but as an area of aesthetic and technical choice through which particular forms of imagery were realised.

7.5 Structural design across materials and media

Structural ('pre-set/incremental' in the terms used here) imagery in cloth is achieved by means of manipulating the ground warp and weft. In Chimú ceramics the structural components of the vessel are those rendered via the mould including imagery, stippling and in some cases, spouts and handles. Some attributes of the visual form of the finished vessel are determined by the form of the matrix from which the mould was taken, while others such as stippling were transferred to the vessel from the mould. It is often difficult to distinguish matrix- from mould-set features, and so I will discuss such pre-set design work in this 'structural' section – also allowing comparison with woven imagery which are structurally rendered.

One clear example though of ceramic designs which are created using the matrix and which would thus accord with my 'pre-set' category of imagery along with warp-patterned cloth, are those incised-appearing geometric patterns found on Chimú-Inka vessels referred to in Chapter Five. The nature of the relief – i.e. negative rather than positive – means that these designs had to have been cut into the matrix, allowing a positive imprint to be transferred to the mould before being rendered onto the vessel sides with a negative effect.

7.5a Textiles

Generally speaking the structural pre-set/incremental step values indexed for different image categories show more variation in the textile sample than amongst the vessels analysed, as discussed in Chapters Five and Six. Structural labour includes both warp- and weft-patterning and it is useful to consider these methods separately to identify which imagery is preferentially executed in the warp and which is weft-based. Chart 7.1 (below) shows the frequency of warp-patterning compares with that of weft-patterning in the textiles of each image category. Chart 7.2 (below) illustrates how the work going into warp- and weft-patterning varies with design type, displaying the average values indexed (values greater than zero) .

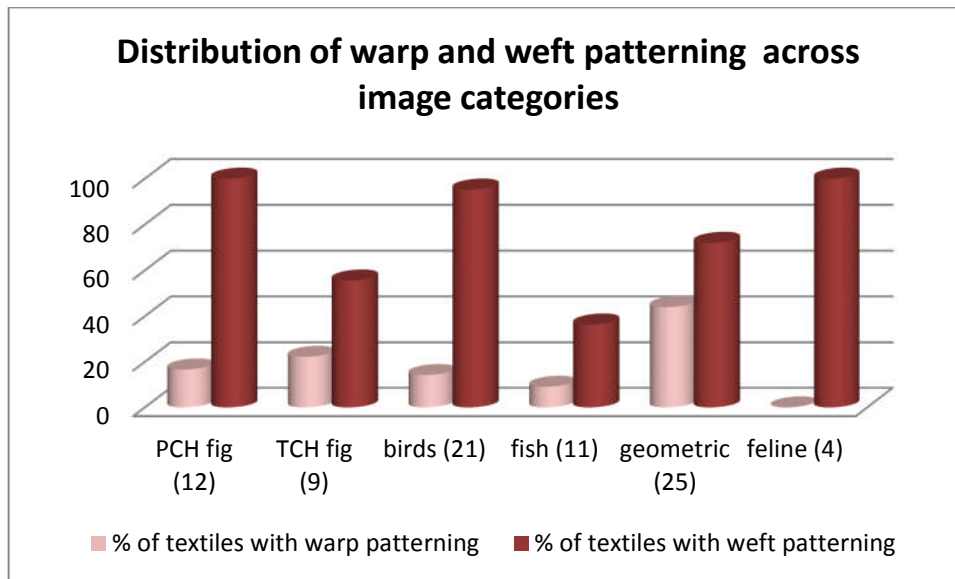


Chart 7.1: Frequency of warp and weft patterning across the sample.

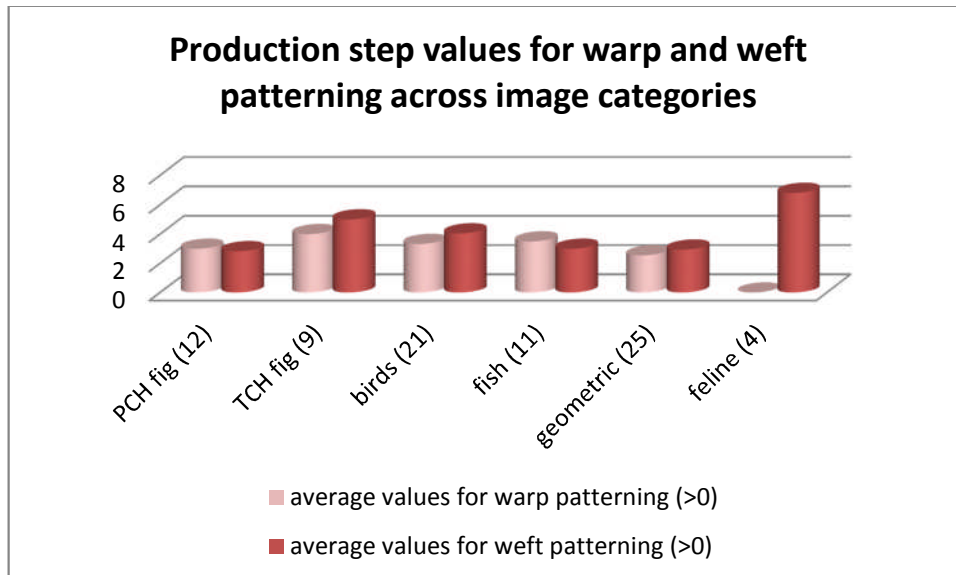


Chart 7.2: Warp and weft work in textile imagery.

It is apparent that there are distinct associations between certain image types and cloth element. PCH figures, felines and birds are rendered preferentially using the weft; the relatively low average value (2.83) indexed for PCH weft work reflects the use of the less labour-intensive supplementary weft techniques. Warp-patterning is generally less well-represented in the study sample but based upon the examples included it can be said that TCH figures and geometric motifs are the most closely associated with warp-based methods. The relatively low average warp-labour value of 2.55 obtained for the geometric category reflects the inclusion of simple warp stripes in addition to the examples of highly labour-intensive DWW. As noted, this category features the most warp-patterned pieces. The TCH figure and geometric categories stand out in that they include relatively high percentages of both warp- and weft-based techniques, a feature which will support the argument made in Chapter Eight for the existence of dual 'lines' of cloth. The close of this chapter draws together this information with that relating to additional and assembly work, and the use of colour schemes to suggest how this may relate to production context.

With regard to the contrast between designs rendered by manipulating vertical and horizontal elements, the DWW technique is significant because it makes equal use of both – the warp is constructed in sections to the same degree that the weft is.

7.5b Tapestry : design and orientation

The highest production step values for weaving are associated with the use of the tapestry technique. Chart 7.2 (above) shows that felines, TCH figures and birds are

the types of imagery most associated with this technique in their high weft-pattern values. Variation in the labour values indexed occurs due to the extent of coverage (e.g. the whole textile or only a border being executed in tapestry), to the weft count and to the use of such labour-intensive joins between colour areas as weft-interlocking (as opposed to leaving slits, as is most commonly the case with Chimú fabrics). The highest values for weft patterning indexed in the study sample are for one textile featuring PCH figures (1954,05.477, Fig.5.10 in Chapter Five), one featuring felines (1954,05.478, Fig.7.3a and b below) and two with bird imagery (IV-2.1-0939 and R-1851 [Fig.5.12 in Chapter Five]).



Fig.7.3a and b, 1954,05.478
British Museum, L: 89cm, W:
7.7cm, tapestry felines.



The technical features of tapestry weaving have particular implications for the conception and execution of the design. These labour intensive pieces involve the joining of adjacent colour areas by means of interlocking wefts, a method associated with highland weaving. The interlocking is not done in every row as is the case with Inka tapestry but by dovetailing at regular intervals to close slits, which is a more rigorous process than the Chimú method of using stitching to close longer slits, and simply leaving the shorter slits open. The extent to which weft-interlocking is carried out strongly influences the way in which the design is built up. The Inka technique for joining colour areas involved the use of meticulous single-interlocking joins which meant that yarns exchanged at every colour change in every row, necessitating the building up of pattern areas uniformly across the whole width of the cloth as opposed to section by section (Phipps 2004: 86). Phipps notes that in the colonial period a change to the use of dovetailing joins in tapestry weaving permitted the weaver to work on different areas of the design at the same time meaning that the pattern could be constructed in a much more natural manner. Dovetailing also allows curvilinear movement of the yarn producing the 'eccentric weft' effects particularly evident in pieces IV-2.1-0939 and R-1851 mentioned above. The Chimú tapestry techniques thus allowed a sectional construction of design, in contrast to the Inka building up of imagery row by row with each passage of the weft across the width of the textile. I suggest that both of these technical choices relating to the production of cloth are conceptually closely related to the preferred ceramic technologies in these respective cultures. It can be argued that the segmented nature of Chimú production - referred to initially in Chapter One and discussed further in the next section of this chapter – is reflected

also in the particular manner of tapestry weaving; similarly the Inka creation of design on a row-by-row basis is comparable to the building up of pottery vessel walls using the coiling method.

The orientation of the warp is a significant technical choice in tapestry weaving which will influence the design conception and creation, and there is an important contrast in how this is achieved for Inka and Chimú weaving. The warp in Inka tunics is oriented horizontally as worn. Weaving was likely undertaken on a vertical loom with the warps vertical (Cobo 1990 [1580-1657] Book II, chap.11: 225; J.Rowe 1979: 241 citing Guaman Poma 1936: 647 [661]) such that the weaver would have constructed the design on the cloth sideways. This is also the case postulated by Conklin (1986: 125) for the creation of Wari tunics, where he establishes the position of the weaver relative to the textile by means of 'lazy lines' indicating work areas, and the slightly curved nature of diagonal lines between design segments indicating radial arm motion. Chimú tapestry on the other hand features warps vertically-oriented as worn – and woven. The position of the weaver in relation to the orientation of the design being created is particularly significant if one considers the demand placed upon the powers of visualisation entailed by different orientations. Stone-Miller (1994: 20) notes the need for 'eidetic' thinking, as opposed to verbal or written information, to keep a visual image of the final product while weaving under confusing perceptual conditions - as for example in Conklin's (1971: 16) suggestion that a Chavín warp-wrapped textile was designed and constructed with the faces depicted upside down. It is suggested that Chimú weavers used the backstrap loom, but Rowe (1984: 26) suggests that this was not

the case with tapestry and that likely a loom with fixed tension was utilised. As noted above Inka tapestry was executed on upright frame looms and the technical decision made was to create imagery sideways. Admittedly, the nature of Inka motifs such as the 'key', diamond and chessboard means that they do not alter greatly in appearance when turned ninety degrees as woven. Also, a brief survey of *tocapu* motifs shows that almost every one looks the same when viewed sideways, with the exception of the miniature chess-board tunics. However the use of a wide loom with warps running sideways, rather than a tall one with warps running vertically would allow greater collaboration - more weavers could comfortably be accommodated around the former. The other option would of course be to create the tunic in two halves with the warps and weaving vertical, but such 'assembly' is never found in Inka garments.

7.5c Pre-set/incremental work in ceramics – mould orientation

There is generally much less variation in the values indexing pre-set or incremental labour for the different ceramic image categories than for the textiles of the study sample. It is interesting though to compare mould orientation with the use of the warp or the weft to create patterning, to consider how the vertical and horizontal planes were employed to construct imagery in cloth and ceramic vessels. It was shown in Chapter Five that the types of imagery most frequently associated with horizontal mould-sets were the Chimú goddess and vegetables; no examples of horizontally-moulded crescent headdress figures or Moon Animals were encountered. Collier's (1955) work, suggested that in the Virú Valley Tomoval or

Early Chimú period horizontal moulds were used to create utilitarian vessels with a simple band of relief patterning on the upper half of the chamber, while the polished and painted wares were vertically moulded bearing near-full-side relief panels on opposing faces (1955: 127-129). It seems probable that the goddess and vegetable depictions derive from this early utilitarian tradition - particularly given that the goddess is the only one of the four principal Chimú deities referred to in Chapter Five to occur solely in the ceramic medium (Moore and Mackey 2008: 798). I suggest that during the Early Chimú period imagery created in the vertical plane was invested with some sort of special significance. Thus the patterned cloth of Pampa Gramalote discussed by Conklin (1996: 327) was executed using the technique of warp twining while the plain cloth was woven. The characteristic North Coast use of paired warps and the development of a suite of complex warp-based weaving techniques also suggest that the vertical element was considered to be significant. Included in this category would be vertically-moulded ceramics. Vessels constructed in horizontal mould-sets along with woven (i.e. weft-based) cloth would comprise a parallel line of more utilitarian goods. Later in the Chimú period, I will argue (in more detail at the close of this chapter and in Chapter Eight), that designs created in the vertical plane had come to characterise independent artisanal craft production which involved minimal state influence in terms of production location, materials access and technique. Potting became centred around the use of vertical mould-sets; this vertically-based suite of goods includes also the all-cotton textiles bearing alternating float weave versions of the TCH figure from El Brujo and the DWW textiles in which - while imagery is produced simultaneously by the warps and wefts - the method is primarily a system of warp

construction rather than a specific technique (Strelow 1996: 133). I will argue that textile imagery produced by manipulation of the horizontal elements of cloth – i.e. using weft-based techniques such as tapestry and the various forms of supplementary patterning developed by the Chimú – by the late Chimú and Inka periods had come to be associated with the production of imagery deployed by the state (Chimú and Inka) for its political or religious significance.

Horizontally-moulded vessels bearing a single band of patterning on the upper chamber would mean that the design had no technical implications to resolve – no matching across seams would be necessary. Vertical mould-sets on the other hand encourage the use of panels of imagery extending from neck to base with plain dividing bands up the seams, as is frequently the case with late Chimú and Chimú-Inka double-chambered bottles. This format of vertically-divided panels is also apparent in Chimú cloth where, as mentioned above it was standard practice to seam together three or four loom widths to obtain a wider piece of cloth than was possible to produce using an upright or backstrap loom.

7.6 Additional and assembly work

It was shown in Chapter Five that the category of imagery most associated with supplementary methods of patterning was the PCH figure. 83.33% of the sample (i.e. ten out of twelve pieces) feature figures rendered in supplementary wefts, with bird imagery being the second image category in which supplementary patterning is most frequent (47.62 % or ten out of twenty one pieces). Only 22.22% of TCH

figures are done using such methods. The differing average labour values for supplementary work of more than zero in the samples of different types of imagery reflect the varying forms of supplementary weave structures, resulting in a figure of 3 points being indexed for TCH cloth in comparison to 2.3 for PCH cloth. This is due to the fact that the particular method used to depict TCH figures in the sample (and in published material) is more involved than that used for PCH figures, while appearing much less frequently than tapestry. Rather than depicting isolated figures and leaving much of the ground cloth exposed as is common for PCH cloth (e.g. 1954,05.593 [Fig.5.7a and b in Chapter Five]; 1907,3-19.61[Fig.7.4 below]) the TCH pieces feature much more extensive coverage by the supplementary wefts such that both the background and the figures are applied (+7510 [Fig.7.5 below]; 1954,05.596 [Fig.5.2 in Chapter Five]). This creates a more planar surface – like tapestry – in comparison to the technique more associated with the PCH figure which results in some relief, effectively leaving the figure standing slightly proud of the ground cloth. I argue that Chimú methods of manipulating fibre, clay and metal favoured the development of surface relief in the various materials worked, as was outlined in Chapter Four. The use of moulds to apply designs on pottery, the working of metal in sheet form, the suite of textile techniques including various types of supplementary weaves, fringing, tasselling and appliqués resulted in the manifestation of relief effects in a wide variety of goods of different substances.



Fig.7.4 (above left) 1907,3-19.61 British Museum, L:14.5cm, W: 37cm: supplementary weave PCH figure.

Fig.7.5 (above right) +7510 British Museum, : supplementary weave birds in TC headdresses.

7.6a Textile-frieze relations

Supplementary textile structures can be considered to provide visual counterparts for the adobe relief friezes at Chan Chan. Several previous authors have commented upon the similarity of the friezes to textile imagery (Pillsbury 1993; Gallardo 2004; Campana 2006). The stepped birds in the ‘Sala de los Arabescos’, Gran Chimú have been particularly cited as epitomes of this relationship with authors such as Campana seeing a derivation from the interlacing of warp and weft at right angles in weaving (2006: 371-373). Desrosiers (2008) draws comparison visually between the stepped birds of Ciudadela Tschudi and a supplementary weft

textile, providing a hypothetical draft of the structure of the woven model (2008: figs.7a and b). I consider that her example of the Tschudi frieze was well-chosen because here the individual birds are separated, spaced out across the frieze in a manner highly comparable to a particular textile structure described by Rowe (1980: 91). This is the second of three types of supplementary weft weave structures identified by Rowe in the Chimú textile sample she analysed from the burial platform, Las Avispas, Chan Chan. Rowe's illustrations (1980: figs. 19a and b) show small isolated bird motifs which compare well with the Tschudi frieze figures if one considers the threads to be magnified in the architectural design, as Desrosiers does. However, I suggest that other friezes reference different textiles without a need to consider yarns to be enlarged. The fore-mentioned stepped birds in the 'Sala de los Arabescos' for example strongly visually reference imagery created using the DWW method. Pillsbury (1993: fig.92) provides a useful reconstruction of the corridor frieze of this room showing how the pairs of birds arranged back to back in mirror symmetry are laid out, each pair featuring a small figure (perhaps a crab) in the intervening cavity. In Chimú weaving the strongly stepped outlining of motifs and the layout are associated more with the DWW method than with supplementary structures which tend to be employed in less complex, more coarsely executed designs.

Another cloth structure which I suggest is prominently indexed (in Gell's 1998 terms) in adobe is that of tapestry, particularly in the instances where a narrow band of motifs borders a larger panel as in the 'Sala de los Arabescos' where a row of monkey-like figures in crescent headdresses borders the main panel of stepped

birds (see Pillsbury 1993: figs.88 and 92). The curvi-linear manner in which these fringing figures are executed makes a strong contrast with the stepped imagery below and I consider it to be a clear reference to the Chimú tradition of applying separately-woven tapestry bands to the edges of larger textiles woven in a different technique. The pervasive lattice-work at Chan Chan in which a 'cut-out' rhomboidal grid is fringed by a band of figurative or geometric motifs provides further examples of this concept (see Campana 2006: figs. 276 and 353). This diamond lattice-work is very similar to netting - a plausible relationship given the maritime nature of much of the frieze imagery. Campana makes the point that in some of these bordering friezes the 'walking birds' are rendered in a different technique to the planar stepped ones which he interprets as swimming (the lower half of the bird comprising the reflection on still water- 2006: 368). The 'walking' ones appear to have been given an additional 'filling' following cutting and plastering to give a more rounded form which he sees as rendering them more naturalistically than the geometricised 'swimming' ones (2006: 368-369). I suggest that this practice has a counterpart in weaving in the use of eccentric wefts to give a curvi-linear quality to tapestry figures, as in pieces IV-2.1-0939 (fig.4.4) and R-1851 (fig.4.12).

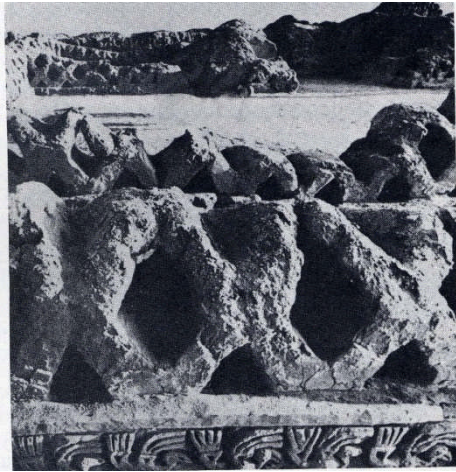


Fig.7.6 (above left): lattice work at Chan Chan; after de Lavalley 1987,p.38.

Fig.7.7 (above right): lattice work and ‘tapestry’ border; after Ravines 1980, p.342.

Two other frieze types which I wish to mention at this point in relation to their possible textile structure models are the cut-out chessboard walls seen in Ciudadela Rivero for example (e.g. Campana 2006: fig.287) and the raised discs with concentric circles (Campana 2006: figs. 288, 352). The chessboard friezes in their format of alternately projecting and excised squares is particularly comparable to the Chimú technique described by Rowe (1980: 95) of constructing cloth of plain weave with alternating squares of gauze weave giving a chessboard effect. The more solid plain weave areas provide contrast to the intervening more transparent

gauze squares in the same way that the projecting squares of adobe off-set the 'cut-out' sections. One example of this structure described and illustrated by Rowe (1980: 96, figs. 24a and b) from Las Avispas features embroidered patterning of concentric circles done in cross-knit loop stitch which are very similar visually and in the sense that they are raised from the ground cloth, to the discs of the frieze. The incised inner circle of the adobe discs compares with the division between the colours of the outer and inner circles on the embroidered versions.

7.6b Supplementary weave cloth, sheet metal and ceramics

Textiles woven in the various types of supplementary methods are striking in the visual effects obtained on the rear face of the cloth as a counterpart to the imagery on the front. In tapestry cloth the rear face matches the front (perhaps with the exception of some floating threads or loose ends) and in double or complementary weaves the imagery on the back is a replica of that on the front but in contrasting colours. In supplementary weaving however, where a partial layer is being manipulated along with the complete ground weave (as opposed to two full layers as in double weave) different visual and relief effects are manifest on the rear of the cloth in relation to the manner in which the imagery is applied on the front. I suggest that these effects parallel the changes in relief on the front and rear of sheets of metal and clay being worked around or over a matrix, or into a mould.

The supplementary weft structure described by Rowe (1980: 91), mentioned above, and used by the Chimú to apply small isolated figures to a plain ground cloth is a clear example of this. The birds are formed by the additional wefts floating on

the front of the cloth giving motifs which are raised slightly from the ground; on the back these additional wefts float across the cloth in the intervening areas leaving the outline of the bird in negative, exposed in the ground cloth (compare Rowe 1980: figs. 19a and 19b). A similar example is shown in piece +7497 in the BM. (It should be noted that this piece is for illustration purposes only and was not amongst those textiles to which the PSM analysis was applied). The ground weave appears to have a paired warp but in this example two adjacent throws of the supplementary weft have the same interlacing order before alternation which according to Rowe's (1980: 92) comparison suggests a Central Coast provenance for this piece. If the piece were Chimú then there would be a change in interlacing order with each pass of the weft). In this case the supplementary wefts are not continuous so they do not float across the rear of the cloth in between the figures, but the positive-negative figure-ground relationship on the front and back is clear (Fig.7.8 a and b).



Fig.7.8a, +7497 British Museum: supplementary weave feline, front

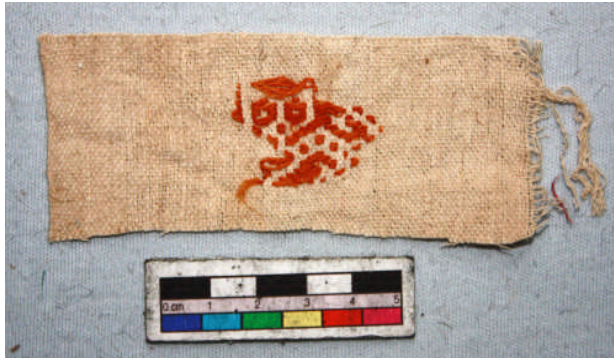


Fig.7.8 b, +7497 British Museum: supplementary weave feline, back.

This relationship seems very comparable to the relief effects obtained in both sheet metal, and clay being worked into a mould. A comparison of the front and rear of a metal anthropomorphised owl figure for example illustrated by Donnan *et al* (2008: fig.7.4) shows the same positive-negative, convex-concave relationship created by the surface of the matrix over which the piece was hammered. To obtain this effect it is of course necessary for the metal to be worked as a sheet – the same figure cast in a mould would display no such relationship between exterior and interior. It seems probable that the interior of such sheet metal pieces was as important in the conceptualisation of the design as the outer surface because the relief on at least some was achieved by working from the back, as Lechtman (1996: 228, 263) points out with respect to a pectoral and a beaker.

The Chimú use of supplementary weft ‘reserve-line’ patterning (Rowe 1984: 57) is of particular interest because the design can be thought of as being rendered as much in the ground of the cloth as in the additional yarns. The weft is caught down at regular intervals beneath a single warp or warp pair such that the outline of the pattern is formed in negative by the exposed warps of the ground (Fig.7.10 below). (As noted in Chapter Four this particular example is from the Central Coast but is a

good visual example of this method). This provides a visual parallel to the Chimú-Inka vessels with incised-appearing geometric patterns such as diamond grids (which as noted above are actually made on the matrix from which the mould for the vessel was taken). The frieze at Huaca Esmeralda (Pillsbury 1993: figs 15-18) in the area of Mansiche East of Chan Chan's centre but within the urban core, is also notable in this respect displaying a strong positive-negative relationship between figures and ground (Fig.7.9 below). Being constructed using the later subtractive technique this frieze, as does supplementary cloth, makes use of two layers with the design being rendered by means of selective removal of the top layer. The rear face of reserve-line patterned cloth displays changes in relief which parallel those created in sheet metal through working. The technique of engraving would result in a similar outer surface to the cloth whereby the design outline appears in negative, but the rear or interior of the metal would remain unchanged. However if the metal is worked, from whichever side, the opposite effect is created on the other side as on the rear face of the textile in which the outline of the design appears perfectly positively rendered in the supplementary yarn, in contrast to its negative portrayal on the 'good' face.



Fig.7.9(above left): Frieze at Huaca Esmeralda; after Pillsbury 1993, fig.18.

Fig.7.10 (above right), 1907,5-15.21 British Museum, L:65cm, W:16cm: supplementary weave textile in reserve-line technique.

7.6c Juxtapositions of colour in single and multi-media objects

Analysis of the textile material in Chapter Four highlighted several patterns in the usage of colour in Chimú and Chimú-Inka cloth. Generally speaking across image

categories in camelid fibre cloth the most frequently represented colours are reds, pinks, tans and yellows while in cotton cloth there is more reliance upon naturally-coloured yarns in browns and creams; indigo is the main colour to appear both in cotton and camelid fibre cloth. The colour data from the sample suggested more specifically however, that distinct colour schemes were associated with particular types of imagery. PCH and TCH figures stood out from the other categories of imagery analysed in that the range of colours used in these textiles is less diverse than those counted for cloth bearing geometric imagery or figurative motifs such as birds and fish. Also there appears to be signature colour palettes operating in association with these two types of figure – brown-indigo-green-yellow for the PCH textiles and red-pink-tan-yellow for the TCH ones. This relates partly to the use of cotton or camelid fibre in that while there do occur fine camelid fibre versions of the later period PCH figure (there is only one in the sample but published material indicates their existence) it is strongly associated with cotton supplementary weft; earlier TCH figures on the other hand are apparently much more frequently executed in camelid fibre. This section of the chapter considers the extent to which these colour schemes can be identified in other media and materials.

Lechtman's extensive studies of Andean metallurgy showed the cultural value of colour effects and how colour was the prompting factor in the development of alloy systems centred around copper, along with a suite of complex gilding and silvering techniques. Thus we see bi-metal juxtapositioning of silver and gold in the same object – the Sicán *tumi* with a silver and gold checkerboard blade (Stone-Miller 1995: fig.127), the Moche necklace from Sipán featuring silver and gold peanut-

shaped beads or Inka llama with the head cast of solid gold and the body of silver (Lechtman 2007: fig.7). The main Inka method of associating copper, silver and gold within the same object however was that of inserting horizontal inlaid bands of these metals into a metal substrate (Lechtman 2007: 327-329). This manner of inlaying materials can be considered as an 'incremental' technique rather than an 'additional' one in that the inlaid bands are also cast and thus bonded with the body of the figurine in a very different way to the Chimú methods of inlaying. The Chimú way was to fit pieces together, as in for example the shell pendant with *Spondylus* and turquoise inlay analysed by Cordy-Collins (1996: 269-270) in which sixteen pieces of tesserae were precisely cut, bevelled and fitted together in an excised section of the shell's upper cortex forming a design of fishing birds. Cordy-Collins (1996: 272-273) describes a standing wooden figure, originally covered in feathers, and now also missing the inlaid eyes; small holes in the corners of the eye depressions however imply attachment with pins. The fish motifs illustrated below (Fig.7.11) show similarly inlaid eyes. Chimú inlays were thus achieved by means of 'assembly' in comparison to the Inka method. These techniques can be considered as strongly compatible with the respective textile technologies of the two cultures – Inka weaving being centred around structures such as interlocked tapestry and warp-patterning, while methods such as supplementary techniques and appliquéing had much stronger roles in the production of Chimú cloth.



Fig.7.11, IV-2.1-0076, Museo de Arte, Lima; H: c.15cm: headband with appliquéd fish

The colour of ingots deriving from the copper-gold-silver alloy system, *tumbaga*, developed on the North Coast ranged from reddish to pink to golden yellow depending upon the ratio of the constituent elements. It seems notable that this is the colour palette also found in fine camelid fibre Chimú cloth, particularly that associated with the TCH figure. Can it be argued that the colour system associated with the metal work developed in tandem with the colour system characterising fine camelid fibre tapestry cloth, during the later Chimú period just before Inka occupation? As mentioned above metal-working makes rather a sudden appearance at Chan Chan probably following the conquest of the Lambayeque area (Topic and Moseley 1983: 164). The textile material excavated by Topic at the capital was also mainly assignable to Rowe's TCH style (Rowe 1984: 32) so it likely that such cloth was produced in close physical proximity to the metal objects which often share their imagery as well as their colouring.

Lechtman's work (e.g. 1988) suggested that copper was the basis of Andean metallurgy, that Andean alloys (with the exception of the naturally occurring gold-

silver alloy of electrum) were alloys of other metals with copper. Copper was the source of the properties sought in Andean metal, particularly those of colour; it was 'the instrument of transformation' (Lechtman 2007: 319). Is there a comparable dye-stuff which played a similar role in conferring culturally-valued colours on yarns to be used in weaving religiously or politically significant cloth? Cochineal might be the obvious candidate for this given the importance of red camelid fibre in Chimú weaving. However it has already been suggested that the red camelid fibre yarns found at Chan Chan had been imported pre-spun and dyed from the highlands (Rowe 1980: 87) and were thus unlikely to have been coloured by the Chimú. Rather I suggest that indigo played a parallel role to copper, within the realm of colouring fibre. Analysis of the occurrence of this dye in the study sample yielded several points discussed in Chapter Four – that it was the most frequently occurring dye used with cotton (and thus colouring would presumably have been done locally), that it was the only dye to be used with both cotton and camelid fibre in the sample, and that it was markedly associated with cotton versions of the PCH figure. Indigo was also the common denominator, functioning as a transforming agent linking the colours of red, pink, purple, yellow and green within the Chimú palette. As noted in Chapter Five, when combined with red it could be used to obtain pink and purple, and when combined with yellow it could produce green yarns. I suggest that this 'alloying' potential would have endowed indigo with particular importance on the North Coast.

7.7 Summary

The discussion in this chapter has suggested how Chimú crafting in different media and materials can be shown to be interconnected at various levels from the manner of working materials, to the conceptualisation of designs, to the execution of these using pre-set, incremental, additional and assembling methods, as well as in the use of colour. Lechtman's studies had identified a North Coast propensity for working metal in sheets; this chapter demonstrated how such a tendency to manipulate materials in planar form extended also to cotton processing and clay moulding, two activities associated with a different cultural subsystem to that in which metal operated.

Chimú design planning was shown to apply several principles including the use of vertical guiding lines and 'default' matrixes or standards. Design conception occurred in the vertical or horizontal plane depending upon the technique and the role of object within Chimú culture. An emphasis on surface relief in various materials was identified and it was shown how its creation in cloth using supplementary techniques produced comparable behavior on the two faces to that manifest in the surfaces of clay and metal sheets.

The visual attributes of different textile techniques used by the Chimú appear to be indexed in the architectural friezes at the capital, suggesting a strong craft-based aesthetic for these works appearing in the elite-associated compounds.

CHAPTER EIGHT: DISCUSSION

Chapters Five and Six detailed the results of the PSM analysis of the textiles and ceramics in the data set while Chapter Seven discussed the extent to which production steps involved in the manufacture of Chimú cloth and pottery can be correlated with those applied to other materials and media such as metal and adobe. This concluding chapter focuses on several of the main themes arising from the data analysed in the previous sections using these to assess the level of state involvement in Chimú craft production and how this alters under Inka *aegis*.

The discussion in Chapter Five highlighted the contrasts between cloth bearing Toothed Crescent Headdress imagery and that in the Plain Crescent Headdress style attributable to the Inka period, with regard to the use of cotton versus camelid fibre, the production steps, techniques and colour schemes used. This chapter, building on the argument made in Chapter Seven for a dual cloth production system operating on the North Coast centring around the use of warp-based and weft-based techniques, explores how these contrasting technical choices relate to the types of image produced. I suggest that cloth which can be thought of as a 'prestige' good was produced with no Chimú state influence using involved warp-based techniques with long-standing cultural significance on the North Coast, and locally-produced cotton and dyes. This line of textile manufacture counter-balances the predominantly weft-based, camelid fibre cloth bearing politically/religiously important figures which is more usually associated with the upper tiers of Chimú society.

One of the most significant distinctions drawn between cloth of the TCH and PCH styles in Chapter Five was that figures in toothed crescent headdresses were associated with much more assembly work than were their plain crescent counterparts. This segmented character of manufacturing would be highly compatible with a centrally-organised production line allowing large quantities of stylistically coherent cloth to be made, using materials under state distribution such as camelid fibre, *Spondylus* shell and metal. However I showed in Chapter Seven that the sectional nature of production identified by Moseley (1975) with respect to wall construction at Chan Chan as well as at the Moche pyramids of Huaca del Sol and Huaca de la Luna structures Chimú production in a variety of media and materials. I suggested that the prevailing method of creating goods of cloth, metal, adobe and in 'multi-media' from assembled components constituted a deeply engrained technical style developed on the North Coast. The analysis of the ceramic data in Chapter Six highlighted the fact that the choice of using two-part vertical moulds to form vessels subdivides the manufacturing process into discrete steps (c.f. Arnold 1999) and also the process of creating the imagery via matrix, mould and additional work. It is apparent then, that segmentation and assembly characterises Chimú crafting in a medium, the production of which previous studies have suggested was carried out independently of state intervention (Tschauner *et al.* 1994; Tschauner 2006).

This chapter draws together these strands – the contemporary production of different lines of prestige goods distinguished by material and technique rather than imagery, and the enduring segmented mode of working materials and creating designs

on the North Coast – to argue that the primary agencies indexed by craft objects associated with ideological or political values and which would probably have circulated among the upper tiers of Chimú and Chimú-Inka society, were artisanal. I also show that the relationships between these and the other – often more utilitarian-objects in the Chimú *oeuvre* were the most significant mechanisms making artisanal roles more instrumental in determining the character of the final output than those of their elite sponsors.

8.1 Textile production chains

Production line organisation is generally associated with increased efficiency allowing greater volumes of goods to be manufactured. Skilled work can be concentrated within the parts of the *chaîne opératoire* involved, where it is most required – such as in the forming of matrixes or firing in ceramic production (Arnold 1999: 64; Tschauner 2006: 178), or in the weaving of tapestry panels for later application to a plain ground cloth. Relatively unskilled labour can then be used to carry out such steps as vessel forming using moulds made elsewhere or by someone else, or the weaving of plain cloth.

An alternative reason for the subdivision of the processes involved in the manufacture of craft goods is that the steps which contribute to the design creation can be isolated from the *chaîne* and carried out in a supervised context. This is probably the case illustrated on the Moche vessel (referred to in Chapter One) which

shows an individual seated on an elevated bench, apparently supervising the weavers below him and receiving their goods. The numerous spindles with yarn placed beside each weaver suggest that the cloth pieces being woven are tapestry panels. The affiliation of the individual in charge in this scene is uncertain – Chapdelaine (2005: 76) questions whether he is a high status functionary of a centralised political authority, or the leader of a powerful and independent corporate group.

The analysis of the degrees of pre-set, incremental, additional and assembly work invested in the objects in this study is particularly informative in this respect in allowing the points at which pieces are invested with imagery to be compared across different materials and techniques. I identified a propensity for pre-setting or creating imagery by default in Chimú craft goods in clay and metal by means of standards such as matrixes, which could be taken to imply a concern with standardising the form of particular objects.

8.2 ‘Modular’ units

With regard to textiles and ‘multi-media’ objects I suggest that the concept of a standardised ‘modular’ production is useful. It is possible to identify in Chimú goods a number of standardised parts or independent units used in construction in a variety of materials. My use of the term ‘modular’ builds upon Conklin’s (1979: 166) application of it to describe the weft-faced bands of consistent breadth appearing on some Moche textiles. (Interestingly, he notes that this structure of plain weave with modular weft

bands is also found in Chavín weaving but that it is not a feature of South Coast textiles implying it may be particular to the North Coast (1979: 166)). However, I suggest that modular parts characterise Chimú cloth to a much greater degree. There are a number of such visual devices which appear in Chimú garments of various types, and which I consider function as modular units. These include the monochrome weft-faced plain weave bands identified by Rowe (1980) in the material she examined from the Las Avispas burial platform at Chan Chan as a feature particular to Chimú weaving. They occur in cotton textiles in a single colour matching the ground weave as Rowe notes, but similar bands are also apparent in cloth which features the use of camelid fibre where they occur in standardised colour combinations of red, gold, green and tan. They are often present in association with matching coloured tiered tassels, another device which I consider as a modular component. These tiered tassels, while showing some variation in the number of tiers, are constructed according to the technique described by Rowe (1980: 102). They are used as corner embellishments on tunics and panels as well as at the ends of long bands or belt. Significantly, both of these visual devices occur in cotton and in camelid fibre. It cannot be said with any great certainty that the cotton versions of these stripes and tassels are imitating their colourful camelid fibre counterparts but it does bolster the suggestion that prestige goods could be replicated in locally-available materials.

One other tassel of modular type is apparently always produced using red camelid fibre, joined into branching tiers. These tassels are associated with Rowe's (1984) Bird Lot style, which she considers to be the earliest of the Chimú material she examined

and occur sewn all over matching sets of garments (consisting of tunic, loincloth and headband). The BM collections include several examples of these devices, now unattached. I know of no cotton versions.

Chimú textile modules also include appliqués of shell and metal, and judging by the material examined in the study sample (e.g. 1954,05.602; IV-2.1-0076; IV-2.1-0081; IV-2.1-0068) these consistently take the form of fish motifs, heavily standardised in their shape, number and placement of fins and in the facial markings.

8.3 State imagery in warp and weft – cotton versus camelid fibre

Returning to the results of the analysis of the study sample, Chapter Five used a comparison of the extent to which labour was invested in the stages of production involving pre-set, incremental, additional and assembly work to determine which categories of imagery were associated with the most segmented construction.

Comparison of the assembly labour values indexed for the different types of imagery in the study sample indicate obvious contrasts. As discussed in Chapter Five, the three categories featuring the most applied design work are the TCH figures, fish and geometric imagery (75%, 63.64% and 52% respectively of textiles). This takes the form of paintwork - the sample includes examples of tie-dye (2006,Q25 and 2006,Q26) as well as painted designs (e.g.+7488, 1907,3-19.10b) – applied fringes, tassels and tapestry panels. This type of tiered tassel appears to be a particularly Chimú feature

(Rowe 1980:102) and as noted above are present in both cotton and camelid fibre versions. Fringing is by no means unique to Chimú cloth - applied camelid fibre fringes also being characteristic of Chancay garments - but the tapestry fringes present on some Central Coast pieces (which are incrementally created, being part of the ground cloth) do not seem to appear in Chimú weaving. The nearest feature to such woven fringing in Chimú cloth I suggest would be the looped weft present on pieces such as 1935,6-3.1 which divides alternately coloured bands; this example also features a short fringe along one edge created by means of wefts extended and looped beyond the warps thus integrating it with the textile. Certainly Chimú fringes are generally of an applied nature.

Garments bearing TCH figure imagery then, are the most 'multi-component' but as pointed out in Chapter Four these applied modular parts tend to supplement imagery which itself involves incremental labour – so cloth features tapestry or warp-patterned imagery with the addition of extra panels, tassels or fringing.

High production step values for pre-set and incremental work occur mainly where the main weave structure is tapestry (as opposed to a plain weave ground cloth with an applied panel of tapestry) and are particularly related to the feline category (average of 6.8 points), the TCH figure category (average of 3 points, including the 0 values indexed for pieces where the imagery is of an additional or applied nature) and the bird category (average of 3 points including the 0 values). If one excludes the 0 values to derive the average values for the warp-patterned and tapestry examples in each image

category then the TCH figures are those associated with the most labour – 6 points in relation to textiles with bird imagery for which the average value for pre-set/incremental work is 5.73 points and 5.67 points for the PCH figures. The average values then are relatively close for the different categories but if one looks at individual values indexed (see Excel summary sheet, Appendix 2) then it becomes apparent that there is a greater degree of polarity in the values associated with the TCH and PCH figures than with the bird, feline, geometric and fish imagery. For the TCH and PCH figures structural work (pre-set and incremental) tends to be indexed at either 0 or a values greater than 5 while the other categories involve examples indexed at 2 to 4 points (there is one PCH figure providing an exception to this rule to which I assigned 2 points to account for the inclusion of coloured warp stripes – 1948,6.5).

I suggest that this polarisation in the values assessing the structural work invested in textiles associated with firstly the slightly temporally earlier TCH figures, shows the existence of two ‘lines’ of cloth in production. This contention is supported also by the usage of cotton in relation to camelid fibre, and by the distinctive color schemes present.

I then look at the evidence for dual ‘lines’ of production in cloth bearing PCH figure imagery, which may be considered to be slightly temporally later, associated with Inka production.

With regard to the TCH figure I consider that the warp-patterned versions reflect a different production environment to those that are weft-patterned. The main reasons

supporting this are firstly that the former variety are always made of cotton while weft-based methods of producing TCH figures are associated with camelid fibre (with cotton playing a practical role in the ground cloth). Secondly, the colour schemes associated with these two types of cloth are distinctive. I emphasise the fact that the study sample does not include enough pieces from which to derive meaningful average values for labour invested in warp-patterning as opposed to weft-patterning, and to compare these across image categories. However I feel that my conclusions regarding the existence of a 'line' of cotton, warp-patterned TCH figures which complement the camelid fibre, weft-based varieties are justified when published material is taken into account.

There are several methods of creating warp-based imagery evident in textiles bearing TCH figures in the study sample and in publications. The sample includes two examples of the alternating float weave structures described by Emery (1966: 113), R-1862 and one piece in indigo and white cotton in the BM collections which unfortunately was discovered too late to include in the PSM analysis (it turned up in a box of previously unsorted material). This weave structure also characterises the material examined from El Brujo where it is associated with columns of figurative motifs of fish and birds, again cotton in indigo, tan and browns. Rowe (1977: 54-63; 1984: 82-88) describes a set of tunics featuring similar columnar organisation of TCH figures and other motifs, distinctive in their extreme length and padding implying their role differed to that of the more standard tunics of shorter length without padding. Several other published examples of warp-patterning used to create TCH figure imagery are notable. One is

illustrated by Rowe (1977: fig.51) and is a border which she assigns to the Late Intermediate Period North or North-central Coast . This piece (in the Textile Museum, Washington, TM 91.54) is constructed of a cotton warp-faced plain weave with warp substitution and features an applied fringe of camelid fibre wefts. The weave structure involves two sets of differently-coloured elements in the warp direction, only one of which interlaces at a time with the set not being used floating on the reverse of the cloth. The two sets exchange interlacing and floating functions, thus substituting for one another (Rowe 1977: 50). The second relevant published example in the collections of the Abegg-Stiftung is illustrated by Calonder and Rickenbach (2007: 197) and consists of a cotton plain weave cloth with warp and weft stripes (i.e. checkered) and TCH figures executed in indigo and tan supplementary warp which is also cotton.

The colour scheme associated with these cotton warp-patterned pieces is indigo-tan-brown-white; there appear to be no examples of colours such as red (which does sometimes occur colouring cotton rather than camelid fibre) or yellow (camelid fibre or cotton). This provides a strong contrast to the weft-patterned TCH figures in the study sample which as was shown in Chapter Five occur in the red-tan-pink-yellow colour scheme and are associated with camelid fibre. In comparison with PCH figures, TCH figures involve higher values of weft-patterning owing to the more frequent use of the tapestry weave structure than supplementary methods of patterning which are common in renditions of the PCH figures. There are included two supplementary weft examples of the TCH figure in the sample but these account for only 22.22% of this category (out of nine pieces) in relation to the 83.33% (ten out of twelve) of the PCH

figures which use supplementary weft patterning. In addition, both of the TCH figures were indexed at the maximal value (three points) for supplementary weft imagery in contrast to the PCH figures which were indexed mostly at a value of two points indicating a lesser quality of weaving.

A similar dual production system centring around the use of warp- and weft-based techniques is much less apparent with respect to PCH figure imagery than it is for TCH figure cloth. Only one example of PCH figures rendered in a warp patterning method is included in the sample (U-00331, discounting 1948,6.5 whose warp pattern value of two points comes from warp stripes in the ground) and I have come across no published examples of warp-patterned PCH figures. Instead polarisation occurs in the weft values indexed for these textiles indicating that the design work either involved very labour intensive tapestry or supplementary weft work of a rather coarse nature. This polarity also indicates that the PCH figures are associated with less diverse weave structures than other categories of imagery, being almost exclusively rendered in two types of supplementary weft patterning or tapestry. There are no examples of structures such as double weave, supplementary warp, DWW, or ground weaves featuring checkered or open-work as occurs with other Chimú imagery, including TCH figures.

PCH figure cloth is significantly much less ‘assembled’ than is the case both with TCH figure depictions and with other types of imagery, with only one piece out of the twelve in the study sample featuring assembly work – a fringe (1919,11-19.16). I argue

that rather than reflecting a segmented organisation of production imposed by the Chimú elite in a drive to increase production volumes the 'modular' construction apparent in textiles such as those of the TCH style indicates a long-standing technical style indigenous to the North Coast. However, the production techniques documented in the PCH figure cloth *do* seem to suggest labour-saving intentions. It is uncertain what proportion of the complete PCH -style corpus would have consisted of tapestry pieces but the implications from the study sample and published material suggest that supplementary weft weaves were the dominant structures in this suite of material. Rowe (1984: 32; 2006: 474) herself suggests that the PCH cloth was manufactured in bulk for broader use amongst Chimú-Inka society whilst the textiles which she assigns to the Pelican Style were intended for more restricted consumption by the elite. The characterisation of this latter group she bases on a set of related garments made entirely of white cotton, finely spun and woven in a distinctive technique involving supplementary weft patterning upon a ground cloth which consists of squares of plain weave and gauze in a checkerboard layout (1980: 95). Rowe also attributes to this style textiles bearing similar imagery but executed in camelid fibre tapestry.

I suggested above that the PCH figure textiles were not associated with warp- and weft-based 'lines' to the extent that TCH figures are. It may be though that the all-cotton Pelican style pieces described by Rowe played a similar role to the warp-patterned TCH textiles discussed in this study. I would not argue that the Pelican pieces can be classed as warp-based with respect to the techniques involved in their production – although the presence of squares of gauze weave does involve warp

manipulation – but rather that the point of their interest is their technical virtuosity and use of cotton. Topic (1990: 166) observed that the textiles from an elite burial platform at Chan Chan were of the Pelican style (although he does not specify whether they were cotton or camelid fibre). The virtuosity of these pieces supports my contention that particular types of fine cotton cloth constituted a ‘line’ of prestige goods which complemented the weft-based textiles of colourful camelid fibre more traditionally thought of as elite-associated.

The geometric category of imagery features the greatest technical diversity of the study sample including structures involving pre-set and/or incremental labour such as tapestry, double weave, DWW and warp striping; structures involving ‘additional’ steps such as reserve-line supplementary weft patterning, and assembly work such as the application of paint, tassels and fringing. Warp-based techniques have the highest frequency in this category of the study sample applying to 44% of pieces (eleven out of twenty five). Amongst these I include two examples of DWW (U-01126 and U-01125b) and two examples of double weave (1954,05.475 and 2006,Q16). (Both methods involve a balance of warp and weft work in building up imagery but DWW is considered as a special system of warp construction (StreLOW 1996: 133) and since the warp-pattern values are indexed at greater than zero for both I place these methods amongst the warp-based suite of techniques).

One other warp-based method which I wish to mention at this point is a form of open-work which produces diamond shapes. While there are no examples of this in

the study sample, I suggest that it visually indexes certain fabrics which would have played an important role in Chimú society – looped or knotted fishing nets illustrated for example in diving scenes on metal objects, ceramics and, I argue, in the adobe walls of lattice work at Chan Chan. This structure is described by D’Harcourt (1962: 55-56) (his examples are from the Central Coast) and involves groups of warps joined in plain weave technique for a few weft passes before being subdivided into two groups. These are independently woven before being joined on their right and left to neighbouring subsections which are then separated and independently woven before re-forming the original group. Such textiles are of interest to this study because it is highly probable that they were produced within domestic contexts with no state involvement. This technique would retain its firm – likely provincial – household association while production was increased at the capital in the later phases of the empire as is thought to have been the case. I consider it to have formed one branch of a technological strand based around the use of cotton and warp-patterning while a second strand developed involving weft-based techniques and the use of camelid fibre.

These two technological strands - one characterised by the use of cotton and warp-based techniques; the other camelid fibre and weft-based – were shown in this section to be most strongly apparent in the TCH figure imagery of the late Chimú period. Under Inka *aegis* this seems to change such that increasing amounts of relatively coarse cotton weft-patterned cloth is produced bearing images of PCH figures.

Two particular points of interest arise from the results of the analysis of the geometrically-patterned cloth of the study sample. One is the association of warp-patterning with the use of cotton rather than camelid fibre and the other is that within this type of imagery, applied work occurs more frequently on warp-patterned than weft-patterned cloth (54.55% of warp-patterned cloth, or six out of eleven pieces in comparison with 36.36% of weft-patterned cloth, or four out of eleven pieces). This suggests that the feature of 'assembling' cloth which I found to be especially characteristic of pieces bearing TCH figures, is not confined to such imagery with its probable political or religious significance. It is found equally in the cotton warp-patterned textiles which I suggest are associated with independent domestic production contexts. This study has shown how the Chimú 'style of assembly' is apparent in textiles, metal objects and clay vessels as well as in the multi-media goods incorporating different materials. It was already very much a guiding principle for North Coast technical practice early on in the Chimú period, based on the construction of the cloth which Rowe (1984) assigns to her 'Bird Lot' category as well as early Chimú material from Huaca Tacaynamo.

8.4 Archaeological evidence for the organisation of craft production on the North Coast

This section revisits the archaeological evidence for Chimú and Chimú-Inka craft production outlined in Chapter Three before a discussion of the results of the ceramic

analysis in Chapter Six. This will allow an assessment of the extent to which segmentation and modular manufacturing were features imposed by the Chimú authorities in a drive to generate rising production levels, or whether these traits resulted from engrained North Coast technical praxis.

Craft organisation during the earlier Moche period has been documented at the sites of Huaca de la Luna and Huaca del Sol, and at the Moche V capital of Pampa Grande providing instructive comparisons with Chan Chan. As was the case at the Chimú capital the majority of the site occupants at Huaca de la Luna were non-food producers. Chapdelaine points out the lack of agricultural tools in comparison to the presence of hoes in the households of secondary and tertiary Moche centres elsewhere in the valley (2005: 73). At Huaca de la Luna it has been suggested that compounds were organised by occupational specialty (Chapdelaine 2005). In contrast to the lack of evidence of ceramic production at Chan Chan (Topic 1982: 165) a ceramic workshop was excavated on the plain between the Huacas de la Luna and del Sol (Uceda and Armas 1997, 1998) and Complex Nine was identified as being dedicated to textile production, evidenced by the frequency of spindle whorls; a small metal workshop was found in Complex Seven (Chapdelaine 2005: 70). However at Chan Chan instead of activities relating to different crafts being similarly spatially separated in distinct workshops, weaving, metallurgy and wood-working were carried out within the same households and workspaces. Topic (1990: 158) observes that one workshop appears to have focused on wood-working but that it also showed evidence of spinning, weaving and metal-working. 'Workshops are specialised spaces but did not

necessarily specialise in one product' he writes (1990: 156), noting the efficiency of this system in allowing direct cooperation in creating compound goods and also between tool-makers and users such as wood-workers and weavers. The association of different crafts with individual houses and *barrios* implies that the workers belonged to the same *parcialidad* (Topic 1990: 164). Comparing this situation with that of craft organisation at the late Moche centre of Pampa Grande one finds that there specific crafts appear to be associated with specific workshops and rooms. Shimada (2005) documents cotton processing, weaving, *Spondylus*-processing and metal-working workshops. These activities were carried out in close spatial association -in adjacent rooms in Structure O for example where the floor of one room with an 'elaborate multilevel terrace complex' yielded evidence of spinning and weaving while an adjacent area further in held the remains of copper working and lapidary work (2005: 192). There does not appear to be evidence of different crafts being practised within the same rooms, as occurred at Chan Chan.

The close spatial relationship between different Chimú crafts at the capital – particularly those of textile production and metal-working – is very compatible with the similarities in the production sequences of goods in these media identified in this study. Chapter Seven explored the parallels in the handling of raw cotton and metal in their plastic manipulation into planar sheets, in the relief effects obtained in these materials and in the assembly of their 'stock' component parts or modules into finished goods. Segmentation in the production of metal goods is also evidenced archaeologically at Chan Chan in the distinctive nature of the activities carried out in

the *barrio* residences and workshops in comparison with those associated with the retainer areas. Detailed information about craft organisation was obtained by Topic from abandoned equipment on house floors, such as copper ingots, raw cotton, weaving swords and spindles. He found that the bulk of ingots occurred in *barrio* houses suggesting that the initial formation of copper and copper-arsenic bronze sheet metal was an important activity here (Topic 1990: 155). Five stone anvils and seventy seven stone hammers were found in the *barrio* rooms (Topic 1982: 162). The retainer areas on the other hand – the elevated platforms adjacent to Ciudadelas Velarde, Bandelier and Squier – seem to have been the locus of finishing work, based upon evidence such as the presence of tools for more complex metal-working steps such as raising up cups rather than the hammering out of sheet (Topic and Moseley 1983: 156).

The textile production evidence Topic's team found at Chan Chan however is interesting. The actual cloth he mentions found in the *barrio* rooms indicates a segmented production sequence – as well as elaborately patterned tapestry and brocade, and cotton plain weaves there were fringed tapes and tassels (1982: 163). However the organisation of cloth production does not appear to be segmented from what Topic describes insofar as all the identifiable textile fragments from the *barrios* are assignable to Rowe's TCH style (Rowe 1984: 32). As discussed in Chapter Five cloth of this type tends to feature relatively elaborate imagery and is assembled from numerous component parts. If its production involved different artisans working in separate areas of the city then one would expect to find more evidence of the initial processing of cotton yarns and of plain weave cloth in the *barrio* rooms and

workspaces, with the finished pieces being more restricted to the retainer areas. It is in these latter parts where the tapestry panels would theoretically be woven, the tassels constructed and the pieces assembled. However the cloth from the *barrios* is of the same style as that from the retainer platforms – Rowe (1984: 74, figs. 49 and 68) mentions several TCH fragments excavated from a house located on a platform across the street from Ciudadela Laberinto; she points out that while the house was made of perishable materials as opposed to adobe its elevation and proximity to the monumental compound imply relatively high status for its inhabitants. The strong presence of spinning activities across the capital as documented by the numerous spindles found in every excavation (Topic 1982: 163) also does not support a segmented organisation. Rather, based upon Topic's (1982, 1990) studies it seems that the artisans engaged in textile production at the capital may have participated in each stage of the process – as well as carrying out work with other materials such as metal and wood.

This suggestion concurs with archaeological evidence of craft production at other Chimú sites such as the regional centre Manchan in the Casma Valley and the village of Cerro de la Virgen in the Moche Valley. At the former, spinning and weaving as well as wood-working, copper-working and *chicha* production are all evidenced in addition to subsistence activities such as shellfish collecting, food preparation and stone tool making (Moore 1989). Raw materials, tools and finished pieces from the houses show that both plain and fine textiles were produced here with a mixture of Chimú, local and Inka characteristics (Mackey and Klymyshyn 1985). At Cerro de la Virgen, 5km

Northwest of Chan Chan and the largest of the three or four contemporary villages in the Moche Valley with a population estimate of over one thousand people (Keatinge 1975: 217), the inhabitants farmed and maintained the local cotton fields. Textile manufacture is strongly documented here with all stages of the production process represented. Cotton seeds, raw cotton fibre, camelid fibre, spindles, whorls and balls of spun yarn indicate raw material processing while backstrap loom components such as an 'anchor' (which may potentially be a loom beam), swords and thread separators reference weaving; copper needles for sewing as well as finished textiles were also present (Keatinge 1975: 224-225). Keatinge does not specify whether the production steps indicated by the equipment were spatially segregated but the implication is that residents engaged in the whole process.

The manufacture of cloth at sites such as Chan Chan, Manchan and Cerro de la Virgen does not then fit with a production line organisation. It seems rather that most artisans worked with cotton and camelid fibre in various techniques and that those carrying out the cotton processing (camelid fibre being probably pre-spun and dyed as previously mentioned) were as likely to be weaving elaborate tapestry panels as plain cloth. This adds weight to the argument of this study that the segmented production processes involved in the crafting of Chimú objects and their assembled character result from deep-seated artisanal attitudes towards the materials they used and to what constituted a culturally appropriate way of forming and treating them. It does not support the alternative theory that segmented or modular production of cloth was an organisational format imposed by the Chimú state in a bid to increase the volumes

of goods manufactured. The production sequences involved in the creation of metal objects do however accord with the organisation suggested by the work at Chan Chan with initial processing steps such as the formation of sheet from ingots taking place in the *barrios* and subsequent shaping, application of imagery and assembling being carried out in the retainer areas as mentioned above. This implies that the elites residing at the capital were most concerned with overseeing the production of metal goods.

It is interesting to speculate upon the extent to which Sicán artisans imported to the Chimú capital may have influenced cloth and metal production in terms of organisation and technical style. Topic and Moseley (1983) suggested that craft production activities at Chan Chan expanded greatly around A.D.1350 with the sudden appearance of metalworking , following the conquest of the Lambayeque area. They suggest that Sicán artisans were resettled here (Topic and Moseley 1983:164; Topic 1990: 150) perhaps forming a precedence for the later removal of Chimú metal-working artisans to Cuzco to produce goods for the Inka state (Rowe 1948:46 citing Cieza 1943, cap.58: 269). An assembled construction is also noticeable in Sicán textiles and metal objects, as is evident for example in the tunic found at Pachacamac illustrated by Rowe (1999: 427,pl.1) which features tapestry panels and bands sewn onto a plain ground cloth. Rowe points out that this is typical of Sicán-style men's tunics which are constructed of two larger and two smaller rectangles of an open cotton plain weave sewn together and decorated with separately woven bands and medallions of tapestry (1999: 428). Such an assembled character is also evident in the sample of Late Intermediate Period

textiles studied by Keatinge (1978) from Pacatnamú. He considers, based upon iconography, that these are associated with the early Chimú period. He notes the presence of 'patches' featuring repetitive motifs woven in a single narrow band meant to be cut apart and sewn onto the front or back of tunics; some of these were found rolled up as long strips (Keatinge 1978: 34). Keatinge points out that the figures themselves depicted actually wear tunics with such patched imagery. If these pieces are indeed early in date, and considering the fact that Rowe's Bird Lot style is associated with garments featuring heavy applied work it seems that the 'assembling' tendency was established early on in Chimú textile production rather than being a feature introduced with the up-scaling in the manufacture of craft goods thought to have occurred later in Chimú history in association with imperial expansion.

The following section considers the results of the ceramic analysis in Chapter Six in light of the previous discussion of Chimú cloth manufacturing and its relationship to the archaeological evidence of production. If segmentation characterises the creation of cotton, non-figurative cloth as much as it does crescent headdress textiles of camelid fibre, is this true for ceramic crafting which also involves the use of a locally-available material rather than state-issued metal or camelid fibre?

8.5 Dual traditions and ‘assembly’ in ceramic production

8.5a Horizontal and vertical moulding

This study has suggested that there were two main technological ‘strands’ in Chimú weaving, one centring around the use of the warp as the pattern-bearing element and the other around the weft. It seems that there may have been a parallel case of two traditions in ceramic production, at least early in the Chimú period. Collier’s (1955) work on the pottery of the Virú Valley referred to in Chapter Six documented the existence of two types of vessel construction in the Early Chimú period, horizontal and vertical moulding, the former being associated with utility ware (based upon the presence of heavily sooted bottoms and a presence in refuse) and the latter with more carefully made and fired ware from burials (1955:127,129). Both were associated with particular visual characteristics, the horizontally-moulded vessels being plain or with a band of relief patterning only between the shoulder and neck or rim while the vertically-moulded pieces are polished and painted or feature two opposing relief panels running from the neck down towards the base. I suggested in Chapter Six that the vertical warp direction seemed on the North Coast to be associated with a particular symbolic significance. This was based on Conklin’s (1975, 1996) work on the Initial Period cloth of Pampa Gramalote which observed that warp twining was used for all patterned textiles while weaving was used for utilitarian fabrics (1996: 327), together with features such as the Chimú use of paired warps and warp-patterned weaving structures. This seems highly compatible with a favouring of the vertical

direction for the production of burial-appropriate pottery. While the use of horizontal moulds seemed to decline from the Early Chimú period onwards based on Collier's (1955) analysis of the wares of the Virú La Plata and Estero periods (Chimú and Chimú-Inka) and the study sample, I argue that the horizontal utility tradition is referenced in the organisation and forms of imagery on later vertically-moulded vessels.

Collier's work showed that horizontal moulds were used to produce vessels featuring a single band of relief patterning on the upper half of the chamber (1955: 128). As I pointed out in Chapter Six this is probably at least partially technically influenced in that with a single horizontal band there is no requirement to match the design across the seams of the mould. Vessels made using vertical mould-sets appear to overcome this problem by organising imagery into panels separated by raised vertical bands. This is apparent whether the seams run down the outside of chambers or down the middle of the front and back as is the case with double-chambered vessels of the Chimú-Inka period made using a single mould-set rather than two. (Vertically-moulded) late Chimú vessels feature hemispherical design panels covering much of the chamber sides, but in the globular vessels (including stirrup spout bottles) of the Inka period decoration becomes restricted to a single circumferential band on the upper half of the vessel (Scheele and Patterson 1966: 24-25). These stirrup spout bottles are vertically moulded but feature designs of a format which in the Early Chimú period would have been created using a horizontal mould-set. The problem of matching the design across the vertical mould seams has been avoided by segmenting the band into sections as featured on the earlier vessels with hemispherical panels separated by raised vertical

bands. It seems that the craft-based design principles of the early horizontally-moulded utility wares are influencing the form of the later vertically-moulded stirrup spout bottles, a type of vessel with probable particular symbolic significance.

8.5b Production process and prestige values in ceramics

I have suggested in this study that types of prestige cloth were produced outwith state involvement in locally-available cotton, the value accumulated by means of factors such as yarn fineness, the use of structurally complex techniques and multiple components. This section discusses whether particular Chimú and Chimú-Inka vessels might be similarly considered as forms of prestige goods based on the analysis of attributes such as structural complexity and the degree of finish. If this is the case then the roll of Chimú sumptuary goods should perhaps be re-configured to include items of cotton and clay which are more often associated with the utilitarian domain of production.

The pre-set mould-work values, which indexed factors including the number of chambers and mould-sets involved and the coverage and level of detail of imagery, were found to be relatively consistent across the different categories of imagery. With the exception of the Chimú goddess depictions it seems that the mould-work involved in vessels portraying deity figures such as the Moon Animal and Crescent Headdress figure was no more involved than that for representations of imagery with less overtly religious associations. Indeed after the goddess, vegetable depictions feature the

second- highest levels of mould-work as a result of the use of sculptural and multiple chambers. Up to three sets of two-part moulds (including both vertical and horizontal types) were used to create visually complex forms such as vessel 1954,05.666 which features twelve separate chambers in the form of lucuma fruits. This particular piece is unique in the study sample but there are several other examples of the use of two mould-sets to create multiple lucuma fruit chambers (e.g. 1929,3-5.15; 1900,11-17.20). These vessels involve very little in the way of visual detail – usually not more than the base of the stalk is represented – but they are consistently highly finished with the mould seams well-smoothed and the surface polished.

Vessels depicting deities such as the Moon Animal and the Crescent Headdress figure in contrast to more naturalistic representations, involve more mould-detail but less structural complexity in terms of number of chambers and chamber form. The strong association of the deity figures with stippling also negates the need for a highly polished finish on these vessels. The most labour-intensive ceramics then are not those bearing imagery which appears on goods such as fine camelid fibre tapestries or metal vessels, but rather those with apparently more quotidian associations. That is not to say that fruits and vegetables were not endowed with symbolic significance in Chimú culture, but they do not appear in camelid fibre or metal to the same extent.

8.5c 'Assembling' ceramic imagery and modular production

I have argued above that Chimú cloth bearing a particular type of imagery, the TCH figure, is highly assembled in its construction and that this applies as much to cotton as camelid fibre versions. I also found that while 'assembly' characterises other forms of Chimú textile imagery (geometric for example) to a lesser extent, it is much less a feature of the PCH figure cloth associated with the Inka period of the North Coast. This section considers how ceramics show a similarly 'assembled' aesthetic both in terms of their visual and technical construction. The persuasiveness of this technical style across different materials and media can allow an assessment of the roles of artisanal agencies in determining the forms taken by objects and images active in those cultural subsystems in which one might expect the most elite influence – for example the adobe friezes plastering the walls of the elite compounds at Chan Chan, metal pieces and fine camelid fibre cloth.

Cloth bearing TCH figure imagery is thought by Rowe (1984) to date to the later Chimú period, temporally close to the Inka occupation which is associated with the PCH figure material. I suggest that it is from the late Chimú phase that a strongly segmented visual assembly characterises ceramics as well as TCH figure cloth. I then show that under Inka *aegis* this changes. The 'assembled' aesthetic associated with visual and technical construction becomes much more marked in Inka period ceramics, than with the contemporary PCH figure cloth.

Gallardo (2004) in his study of Chimú visual features makes the point that the principle of assemblage applies to the iconography as well as to the physical construction of objects. He cites as an example the stepped pelican motifs on the friezes of the Tschudi, Laborinto and Gran Chimú compounds at Chan Chan, showing how these motifs consist of four geometric units – a stepped cross, two half crosses and a stepped triangle (2004: 47). In Chimú ceramics a comparable form of the ‘modular’ construction that I identified for textiles above is evident in the dividing up of imagery into panels on chamber sides and stirrups, in the appearance of motifs interspersed amongst stipples and in the use of multiple rather than single, lugs. While the ceramic construction process is arguably stream-lined , particularly in the later Chimú period with the incorporation of stirrups and spouts within the mould (Larco Hoyle 1948: 51) in contrast to earlier techniques which saw the addition of these elements by hand-modelling , the process of constructing imagery is segmented.

This is particularly apparent in stirrup spout bottles assignable to the Inka period (based upon the presence of features such as flattened rims and pierced lugs, after Scheele and Patterson 1966: 25). Such bottles often feature decoration organised either into a single circumferential band divided into segments, or into several horizontal registers one above the other (e.g. 1929,3-5.14; 1938,6-7.6). Motifs in these cases are repeated, very consistent in form and as observed in Chapter Six the Moon Animal figure is often shown turned through 90° from the vertical orientation seen earlier. I suggest that this implies a change in the technique of execution of these figures on the Inka pieces to that of stamps applied to the moulds. The non-vertical

orientation of the motifs does not itself indicate stamping, but rather I think a concern with making the imagery fit into a modular band of consistent width. This is also probably the case for the bands of impressed patterning (usually small bird motifs or Moon Animals) seen on the stirrup sides of some vessels. Scheele and Patterson (1966: 24) attribute this trait to the latest Chimú vessels produced before the Inka occupation. The study sample though includes examples of such bottles which also feature Inka-derived elements, such as the above-mentioned flattened rim so patterned stirrups certainly seem to have persisted into Inka production.

Another instance of imagery rendered using stamps on vessels with Inka elements is the appearance of small, randomly-orientated figurative motifs such as birds or fish interspersed with stippling referred to above in Chapter Five. Vessel 1921,10-27.178 is particularly notable in that the stippled background features copious quantities of small birds, often upside down relative to the main imagery of a snake and lizard placed nose-to-tail around the chamber, and closely clustered together in places. The apparently random placement of these small birds recalls a visual device used on cotton, rather coarsely-woven supplementary weft versions of the PCH figure. In such textiles (also of the Inka period) one frequently sees small birds organised in bordering bands at the edges of the cloth, upside down in relation to the PCH figure, and sometimes scattered around the figure in various orientations (e.g. 1919,11-19.16). These upside-down framing motifs appear much less in tapestry versions of the PCH figure (such as those illustrated by Rowe 1984).

The use of stamps to generate repeated motifs in the mould rather than working it directly bears comparison with 5th century B.C. Chinese bronze casting. Bagley's (1993) study of *hu* vessels details the production process involved in the creation of the moulds used in their casting from the derivation of a blank two-part mould from a model of the vessel, to the decoration of this mould by means of pattern blocks. It is particularly relevant to the Late Chimú/Chimú-Inka material because it shows how the decorative stage could be sub-divided. Prior to the Eastern Zhou period with which Bagley is concerned the first step of mould-making involved the carving, in a single step, of a fully-decorated model of the vessel to be cast (1993: 238). The pattern block technique involved the use of blocks carved with a single unit of decoration from which clay negatives would be taken and pressed or 'wall-papered' into the inside of the mould in horizontal bands (1993: 232-234). The benefits to be gained from this system of working include the ability to closely fit the design to the curved surface of the vessel, and the mechanical replication of the work of the most skilled carvers.

This concentration of skilled labour within one step of the production process is also apparent in Chimú ceramic manufacture using a mould matrix as the primary decorative means rather than the use of stamps to apply imagery. Ramon (2008: 220) points out that amongst contemporary potters in the highlands of La Libertad only a few potters learn how to make moulds and the matrix prototype; the skill of mould-making and 'the modelling of moulds without a tangible referent' is especially valued in that the artisan is able to adapt to the customer needs. There is some difficulty in telling from individual vessels the extent to which imagery was created via the matrix

or by manipulating the mould. As referred to above in Chapter Six several groups of Inka-period vessels suggest that their patterning was achieved by incising designs into the matrix. These include the aryballoid-influenced bottles in the form of human heads with braided hair (e.g. 1880,4-5.6) and the oblong-shaped bottles with a band of concentric stepped diamonds topped by two panels of diamond-grid designs (e.g. 1858,4-3.5). The designs look incised but are sufficiently standardised between vessels to suggest that they were created in the mould, meaning that the original version had to be cut into the matrix.

8.6 Summary

It seems that the two early traditions of horizontal and vertical moulding merged in the later Chimú period but that the tradition of horizontally moulding utility ware is still evident visually in vertically made vessels. I suggest that this indicates a strong domestic influence rooted in craft-based principles, even in vessels bearing elite-associated imagery such as the Crescent Headdress figure.

Labour-intensive cotton warp-based cloth constitutes a parallel line of goods to the highly-finished, structurally involved naturalistic vessels depicting fruits and vegetables. These virtuoso goods contrast with the 'state-issue' weft-based cloth such as the coarsely-executed cotton PCH figure textiles and the stippled Crescent Headdress figure vessels. Segmentation is a persuasive element structuring the production of Chimú goods in different materials and media. In the Inka period 'state-issue' textiles

are less assembled than are those of the preceding period; Chimú-Inka ceramics though show increased segmentation of the design.

CHAPTER NINE: CONCLUSION

9.1 Research contributions

This study has examined the nature of elite involvement in craft production on the North Coast of Peru between AD1000 and 1550 under successive Chimú and Chimú-Inka administrations. It has demonstrated how the extent and mechanisms of elite control before and following the Inka conquest varied with material and media. Specifically it has shown how some goods do suggest elite input both in terms of materials and their accomplished execution. It also identifies goods of a prestige nature in locally available cotton and clay that could have been produced using techniques native to the North Coast and outwith any state influence. I have shown that the technical style of segmented production using modular units which had been noted by several previous authors as characterising Chimú textiles (Young-Sanchez 1994, Gallardo 2004) pervades Chimú production in other media such as ceramics, adobe friezes and metals. This mode of production in piece-work fashion had previously been interpreted as a feature of assembly line fabrication within specialised workshops that were under elite control (Young-Sanchez 1994: 43; Gallardo 2004: 41). Here, however, I have shown that this way of working is apparent in objects of locally-available materials such as cotton and clay as much as in pieces manufactured using the 'luxury' materials (e.g. camelid fibre, metal, *Spondylus* shell and feathers) which were subject to much more rigorous control. The Chimú elite may have utilised this

tradition of segmented production to organise artisanal operations in the most efficient way, concentrating skilled labour in the parts of the operative *chaîne* where they were most required. There is ample evidence to suggest that this segmented mode of production was already deeply embedded in the artisanal traditions of the North Coast.

This study has also expanded upon previous influential works on textile and metal production on the North Coast. Ann Rowe (1984) classified Chimú cloth into stylistic groups using the technical and iconographic features of provenanced material. Here I made use of her categorizations in organising my own sample material but I was also able to suggest that, particularly with respect to her Toothed Crescent and Plain Crescent Headdress groupings, these may be further refined into several 'lines' of cloth associated with different production contexts.

Heather Lechtman's work on Andean metal is pioneering and of fundamental significance to the study of metal-working and to studies of technology and style more generally. However I have made the point that she tends to focus on specific parts of the total production sequences, with respect to her analysis of metal goods. In order for comparisons to be made of how technological styles are played out across media and materials, the 'stylistic' steps need to be considered within the overall context of the *chaînes opératoires*, and I have compared these steps across a number of media.

9.2 Methodological evaluation

Feinman *et al's* (1981) Production Step Measure proved to be an appropriate analytical tool for this study which uses the concept of the *chaîne opératoire* to elucidate the series of steps involved in the manufacture of an object from raw materials. The application of this approach to study textiles was successful and worked particularly well with the Chimú material owing to the strongly sub-divided processes of ceramic moulding and textile construction involved. Although this measure does not consider the size of the artefacts under study, it does mean that fragments of textile and pottery can be considered and that the technique does not rely on having complete artefacts. The question of size (like the issues of distribution, function and archaeological context) need to be analysed through alternative approaches. The PSM analysis provided a method of assessing the extent of artisanal agencies indexed in particular objects; this is an issue which Gell (1998) identified but was less able to quantify. The PSM allowed the technical choices made at each stage to be identified, recorded, quantified and compared with alternatives used in the production of other objects that may have similarities in appearance but be made with quite distinct materials or techniques (c.f. Lemonnier 1986). I was able to identify the steps where imagery was emplaced (i.e. the point at which the appearance of the object was determined), and relate these between media to gain an indication of how artisanal inputs were balanced with craft-based or state imposed influences.

I showed that the PSM could be adapted for use with other media such as textiles, this is essential if we are to develop cross-material studies, as these will require systematic comparisons to be made between different objects. Thus the PSM allows the labour invested in steps relating to the initial processing of materials, to structural and applied work and to finishing the objects can be meaningfully indexed and analysed.

9.3 Summary of findings

In Chapter Five I presented the results of the textile data analysis finding that the most significant contrasts occurred when comparing cloth bearing TCH figure imagery with that of the Inka period, or PCH figure style. TCH figure textile incorporate more camelid fibre than do PCH versions, both in the higher frequency of tapestry in this category and in finer-quality supplementary weft patterning. TCH textiles are also notably more 'assembled' than are PCH figure depictions. With regard to the latter, rather than sub-dividing the production process the emphasis seems to be on labour-saving techniques such as large-scale supplementary weft weaves. Several distinctive colour schemes were found to characterise Chimú cloth. One comprises red, pink, tan and yellow and is associated with camelid fibre versions of the TCH (and to a lesser extent) the PCH figures while the other, brown-indigo-white cotton with yellow camelid fibre is associated with cotton PCH figure cloth. It seems probable that during the late Chimú period cloth bearing politically/ideologically-charged imagery such as

the TCH figure was produced at the capital, both in the *barrios* and retainer areas while in the outlying areas a similar dual system operated whereby artisans produced high-quality warp-based cloth in cotton, as well presumably, as plain cloth for domestic use. Under Inka occupation though, I argue that cloth production became more polarized with the manufacture of high quality camelid fibre tapestry shifted to centres such as Farfán and Tucume while provincial households were responsible for creating large amounts of low-quality cotton PCH figure cloth using less labour-intensive weft-based methods. It is unlikely that warp-based techniques would have ceased to be used completely given their long-standing persistence on the North Coast, but it does not appear that they were used to create PCH figure imagery.

In Chapter Six the ceramic analysis focused on mould orientation and the extent to which labour invested in mould-work was supplemented with additional modelled work and applied paintwork and incisions. The degree of finishing on different vessels was also indexed. Mould-work values were found to be relatively consistent across image categories but with variation in the association of stippling with imagery and also in the degree to which designs are segmented into bands and panels. Additional and applied steps are associated with vessels bearing naturalistic imagery more than those with deity representations, which can be taken to imply that the latter are more highly standardised. In both the Chimú and Inka periods though the bulk of pottery on the North Coast seems to have been manufactured outside of direct state control. The exception would be the aryballoid vessels studied by Hayashida (1999) at Tambo Real and La Vina where the production of this new form, using a new firing technique does

suggest some state input. Pottery would have played an important role in spreading Chimú and Chimú-Inka iconography down the coast but how it was used outside burial contexts need to be considered to better understand the mechanisms and meanings of this spread.

Chapter Seven discussed the textile and ceramic data in relation to production sequences for other media such as metalwork and adobe friezes. It showed how parallel treatments of materials are evident at different production stages, from the processing of raw materials to the assembly of the finished objects. Several principles were identified in Chimú design planning such as the use of vertical guiding lines in warp-patterned cloth and adobe friezes, and tangible standards such as mould matrixes and wooden or stone matrixes for metalworking. Visual attributes such as surface relief effects were compared across materials with parallel effects identified in cloth, metal and clay. The analysis of clay objects in this study formed an essential set of comparative data meaning that production in a material which involved minimal state interference could be compared with crafting in fibre and metal which was subject to much more elite involvement. It allowed assessment of the degree to which particular techniques and a segmented mode of working reflected deeply embedded North Coast technical practices rather than state-imposed influence.

Chapter Eight focused on several themes including the identification of dual 'lines' of goods production. For textiles one centred around the use of often-complex warp-based techniques with cotton while the other involving the weft-based camelid fibre

cloth. In ceramics in the early Chimú period two traditions are evident in the production of utility ware using horizontal moulds and burial ware using vertical moulds. Later, the use of horizontal mould-sets reduces but vessels still reference the horizontal tradition in visual features. I argued that attributes such as structural complexity and finish distinguish 'prestige' vessels from less-involved representations of 'state-issue' imagery.

The identification of different 'lines' of goods suggests that in addition to being made within different spheres of production they were also distributed through different spheres of exchange and consumption (c.f. Appadurai 1986). If the elaborate camelid fibre TCH figure tapestries were partly intended for concentration and curation at the capital (following Conklin 1990), then perhaps their labour-intensive cotton counterparts were meant for circulation amongst the provincial elites. I speculate that their role would have lain in spreading Chimú iconography around the Empire and also in indexing Chan Chan itself by virtue of their providing a visual reference to the friezes.

The other theme analysed was segmentation in North Coast production, which showed this to be characteristic of different Chimú media and also materials, being apparent in cotton and clay as much as in camelid fibre and metal. This suggested that it was a long-standing technical tradition rather than a state-imposed feature of production organisation. A survey of the archaeological evidence of Chimú craft production suggested that while metal-working seemed to be segmented both in terms of assembly of individual objects and in the lay-out of production, the same cannot be

said for cloth production. While the textiles found at the capital are of the assembled TCH figure style and thus compatible with a production line organisation, the archaeological evidence suggests that all sectors of the population took part in the whole process of production from spinning to assembly.

9.4 Future areas of research

I would like here to highlight the potential of museum collections for study both in themselves and in relation to other collections and excavated material. The size and range of the British Museum collections made a cross-media study of this nature possible and there is still much to be done with the wealth of material here and in other institutions, in and outside Peru. Museum collections, both with and without contextualisation are valuable markers of the breadth of cultural production in the past and as such should be incorporated more into archaeological study.

A future study of this nature would certainly greatly benefit from the use of more material with recorded archaeological context. Material from a site with evidenced textile and ceramic production (such as the Inka-period occupation of Farfán in the Jequetepeque Valley) would be invaluable in allowing examination of how artisans working in close spatial proximity shared techniques and imagery. It would also be useful to be able to compare data concerning weaving at Chan Chan and at provincial sites such as Cerro de la Virgen to see whether the warp- and weft-based textiles can be associated with independent household production at sites such as the latter, and

the capital. I emphasise though that museum collections constitute strong comparative data-sets for such provenanced material and that their breadth should not be under-estimated.

Given the documented close spatial proximity of cloth and metal-working at Chan Chan it would be beneficial to develop a Production Step Measure for use with metal objects. This would allow a more thorough comparison of the structuring of the production sequences involved in both media particularly since as I argued, it seems that metal-working was subject to more supervision than was weaving (at the capital at least).

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